Fishery Data Series No. 91-19

Incidental Harvest and Voluntary Release of Steelhead and Chinook Salmon in the Situk River Commercial Set Gill Net Fishery during 1990

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ABSTRACT

Commercial fishermen were interviewed during the first five openings of the 1990 Situk/Ahrnklin set gill net fishery to determine the incidental harvest and/or release of steelhead *Oncorhynchus mykiss* and chinook salmon *Oncorhynchus tshawytscha*. Few steelhead were encountered, probably because the emigration of steelhead was largely complete by the time the fishery began. The estimated personal use harvest of steelhead was 12 fish (standard error = 4), and the estimated voluntary release was 14 fish (standard error = 5). Another 21 steelhead were caught and sold. Commercial fishermen were not permitted to sell chinook salmon, so all harvests were for personal use. An estimated 410 (standard error = 29) chinook salmon were taken for personal use and another 574 (standard error = 84) fish were voluntarily released.

KEY WORDS: steelhead, *Oncorhynchus mykiss*, chinook salmon, *Oncorhynchus tshawytscha*, commercial harvest, personal use, voluntary release, Southeast Alaska, Yakutat, Situk River

INTRODUCTION

The Situk River is located on the Gulf of Alaska approximately seven miles south of the community of Yakutat (Figure 1). The river is 22 miles long, includes two lakes at its headwaters that have a combined surface area of approximately 992 acres, and is accessed at two locations by the Yakutat road system. Large commercial harvests of sockeye salmon *Oncorhynchus nerka* and coho salmon *O. kisutch*, take place in the lagoon at the mouths of the Situk and Ahrnklin rivers. The most important sport fisheries on the Situk River are for steelhead *O. mykiss*, chinook *O. tshawytscha*, and coho salmon. The Situk River supports the largest known population of steelhead in southeast Alaska and an average 12,571 angler hours of effort (1985 to 1989) are expended annually to catch 3,881 steelhead (Johnson and Marshall *In press*). The Situk River also provides opportunities for local subsistence fishing, with up to 50 permits issued annually. The subsistence fishery targets sockeye and coho salmon; approximate estimates of the annual subsistence harvest range from 700 to 4,000 sockeye salmon and 60 to 800 coho salmon. Approximately 80 chinook salmon are reportedly taken each year in the subsistence fishery, but few steelhead are reportedly taken.

The commercial fishery for sockeye salmon at the mouths of the Situk and Ahrnklin rivers is historically the largest and most heavily fished in the Yakutat area. Sockeye salmon catches in this fishery averaged 47,738 fish a year between 1960 and 1989 (Figure 2). Escapements of sockeye salmon to the Situk River have been enumerated by the Alaska Department of Fish and Game (ADF&G) Division of Commercial Fisheries annually since 1976 (Figure 3). The escapement goal for sockeye salmon on the Situk River was a minimum of 100,000 fish from 1971 through 1982, and 80,000 to 100,000 fish from 1982 through 1986. The goal was revised to 45,000 to 55,000 fish in 1987 following an analysis indicating a lower escapement would produce larger returns (McPherson et al. 1987). Commercial harvests of sockeye salmon in 1987 (52,108 fish) and 1988 (63,595 fish) were approximately twice the previous 10-year (1977-1986) average of 30,435 fish. The 1989 harvest (99,932 sockeye salmon) was the second largest since 1960.

Chinook salmon are targeted by sport and subsistence fisheries in the Situk River and are taken incidentally during commercial fisheries for sockeye salmon. An escapement goal of 2,000 "large" (3-5 ocean-age) chinook salmon was established in 1981, using the largest observed escapements from 1975-80. That goal has been achieved only once in recent years (1986). The escapement goal was revised late in 1988 to 1,000-1,400 "large" chinook salmon, based on an analysis of historical data using fixed maturity schedules and assumed harvest rates. Observed escapements of 885 "large" chinook salmon in 1988 and 653 in 1989 were below the revised escapement goal and suggested a declining trend (Figure 4). Because escapement was low the sport fishery for chinook salmon on the Situk River was restricted to catch-and-release fishing in 1989 (Johnson and Marshall 1990).

During the early 1980's, commercial harvests of chinook salmon in the Situk/Ahrnklin River fishing area were reduced by delayed fishery openings and reduced fishing time for sockeye salmon (Bethers and Ingledue 1989). From 1984 through 1987, the chinook salmon sport fishery was also restricted to help achieve the escapement goal. Early in the 1988 season, ADF&G encouraged both commercial and sport fishermen to voluntarily release large chinook salmon. Neither fishery released a significant portion of its catch, however, and the return of chinook salmon was not large (Bethers and Ingledue 1989). Retention of chinook salmon was prohibited in the commercial fishery from June 30 through

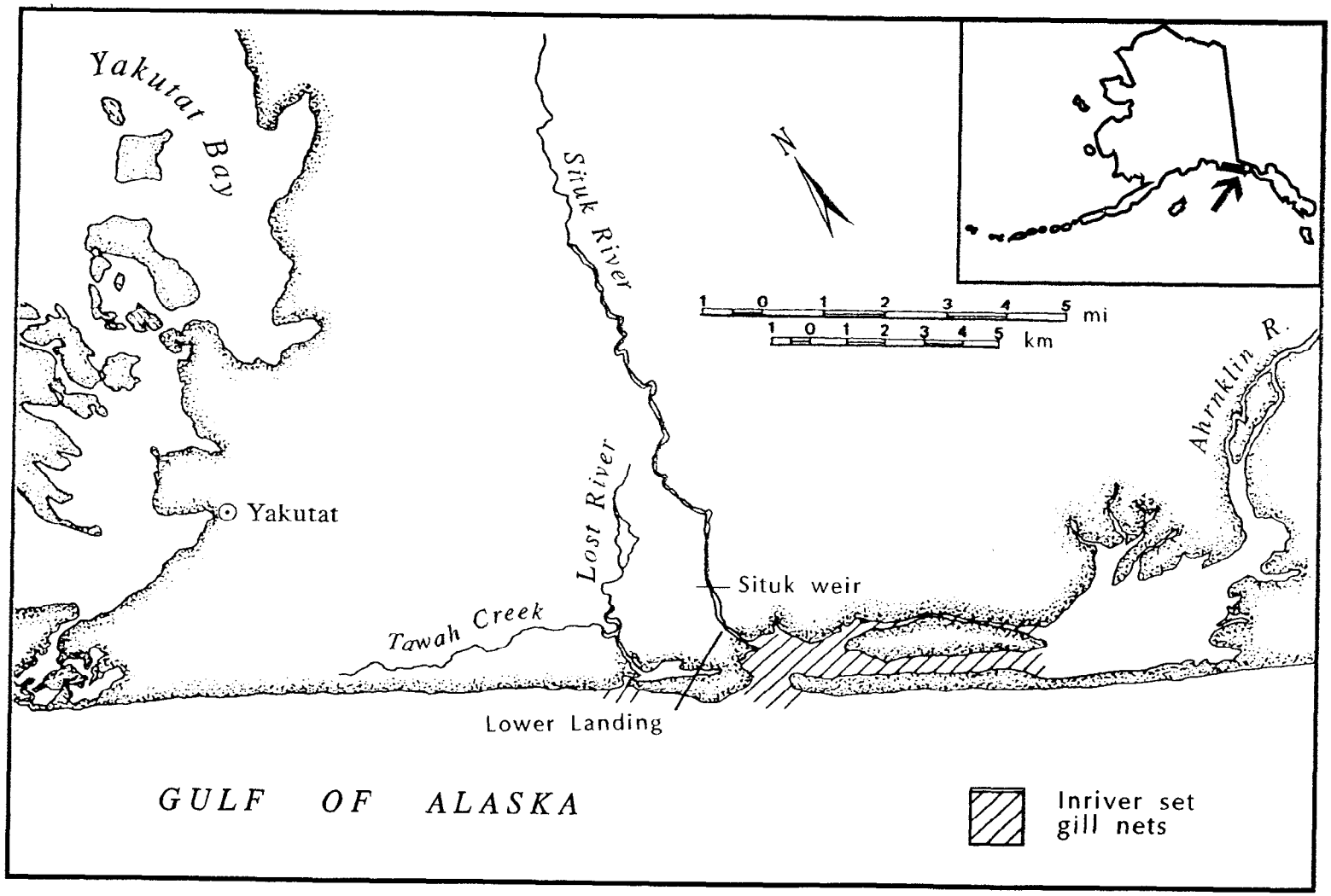

Figure 1. The Yakutat area and the Situk River.

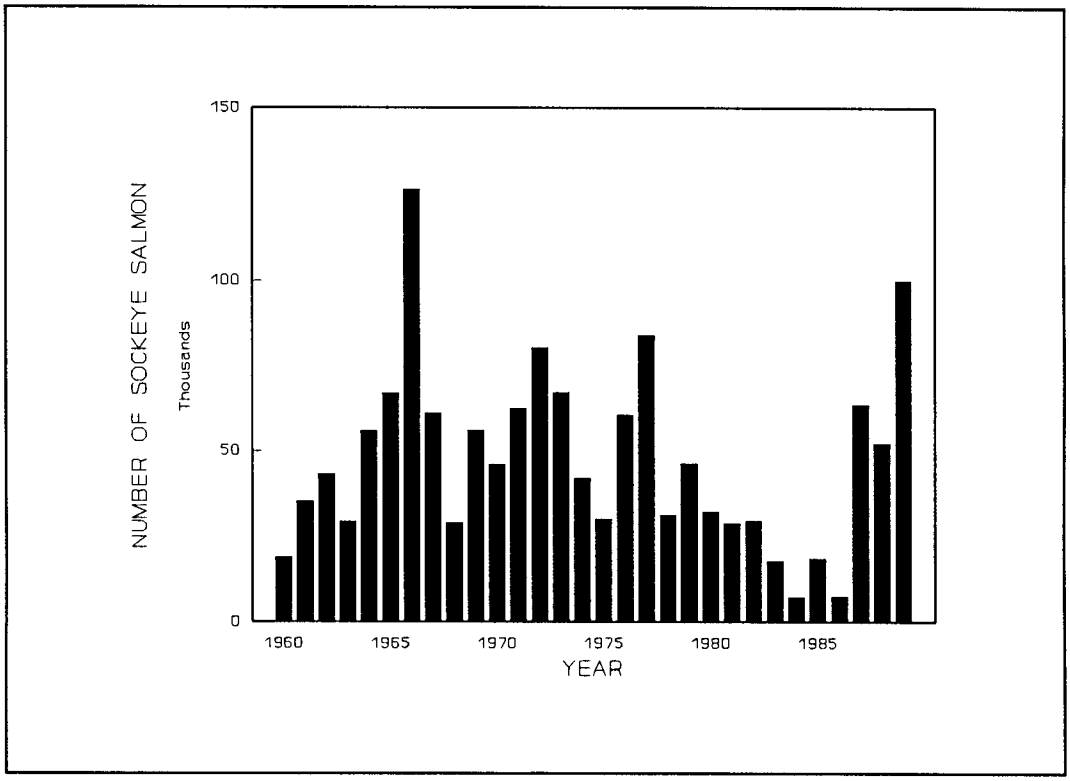

Figure 2. Landings of sockeye salmon by the commercial set gill net fishery at the mouth of the Situk-Ahrnklin rivers, 1960-89.

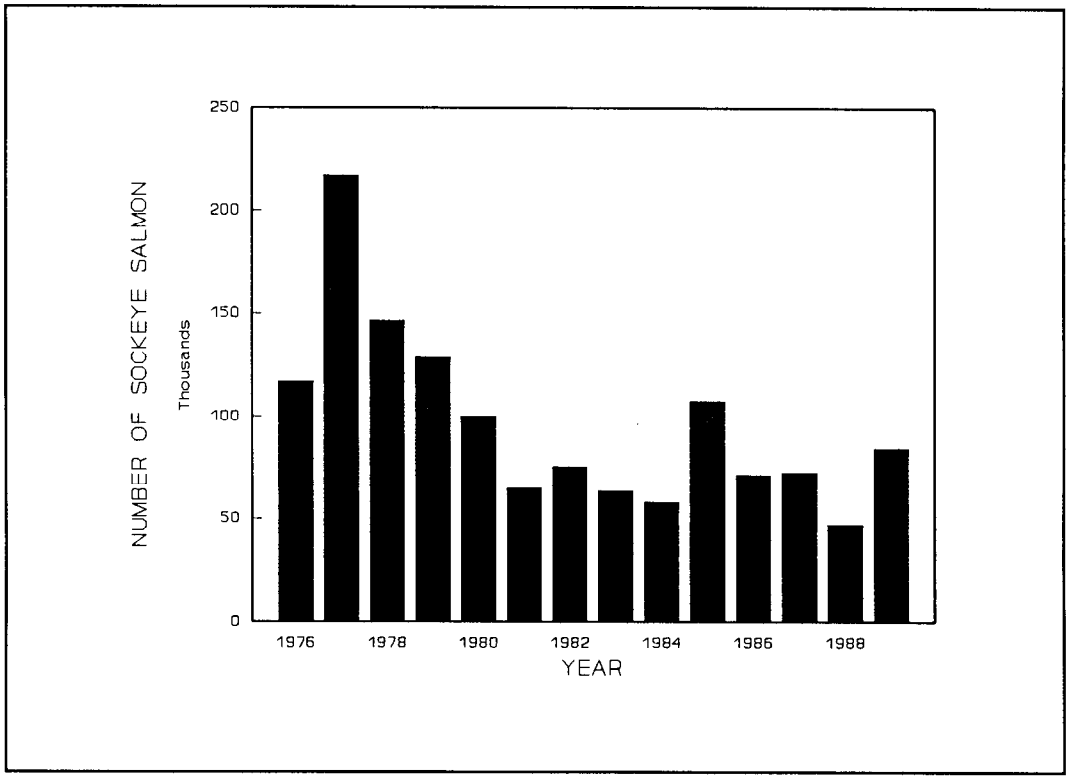

Figure 3. Escapements of sockeye salmon recorded at the Situk River weir, 1976-89.

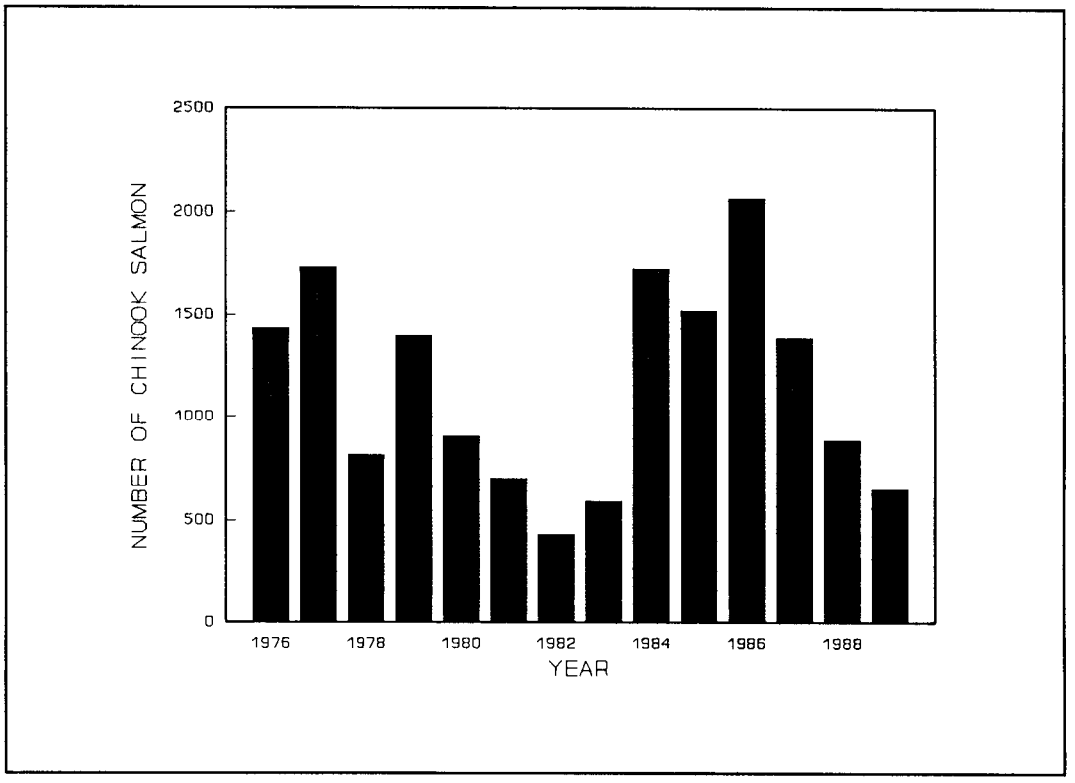

Figure 4. Escapements of chinook salmon recorded at the Situk River weir, 1976-89.

the third week in August. Similarly, the sport fishery was restricted on July 5, 1988, by closing upstream areas to fishing, prohibiting the use of bait, and prohibiting retention of chinook salmon over 28 inches in length.

During 1989, the Alaska Board of Fisheries adopted a management plan for the Situk River chinook salmon sport fishery. It directed ADF&G to close the sport fishery if the projected chinook salmon escapement to the Situk River was less than 400 fish. At projected chinook salmon escapements between 400 and 1,000 fish, ADF&G was directed to open portions of the river to a sport fishery using unbaited artificial lures and requiring release of chinook salmon greater than 16 inches in length. The sport fishery was to be opened to the harvest of chinook salmon over 16 inches in length with a one fish daily and two fish seasonal bag limit if the projected escapement of chinook salmon to the Situk River exceeded 1,000 fish. In an attempt to reduce the waste which could result from prohibiting retention of chinook salmon killed during the sockeye salmon fishery, the board also authorized ADF&G to establish periods by emergency order during which chinook salmon could be retained but not sold.

The return of chinook salmon to the Situk River appeared weak throughout the 1989 season, and emergency regulations prohibiting the sale of chinook salmon from the commercial fishery were in effect throughout the season (Weiland 1990). Due to a projection of low escapement, the sport fishery for chinook salmon was closed by emergency order. Since chinook salmon retained from the commercial fishery were not recorded on sales receipts, interviews of fishermen were necessary to determine the effect of the "chinook salmon non-sale" restriction. Periodic interviews of fishermen suggested that 80-90% of the chinook salmon caught were released.

Due to projections of large returns of sockeye salmon to the Situk River in 1990, the ADF&G announced the sockeye salmon fishery would open on June 11 (Statistical Week 24), one week earlier than in previous years. ADF&G was concerned that this early opening of the sockeye salmon season could affect species that might be taken incidentally during the fishery, primarily chinook salmon and steelhead. The objectives of this project were to estimate the numbers of steelhead and chinook retained for personal use and released during the 1990 Situk River set gill net fishery during periods of "chinook salmon non-sale" from June 11 through July 15.

METHODS

Interviews of Commercial Fishermen

Landings for the Situk-Ahrnklin set gill net fishery are delivered for sale at a buying station located at the Situk River Lower Landing (if operated) or at processing sites in Yakutat. Interviews of fishermen delivering their catches to buyers at the Lower Landing were used to gather data to estimate numbers of steelhead and chinook salmon retained for personal use or released during the 1990 Situk River set gill net fishery. A fisherman was asked his/her name, permit number, and how many chinook salmon or steelhead were retained for personal use or released while fishing for the fish landed in that delivery. The date, time, and size (number and/or pounds from the sales receipt if available) of a landing was also recorded. Interviews were conducted during most buying hours at the Lower Landing. As many deliveries were sampled as possible during

interview periods but a truly random sampling of deliveries, especially with respect to time, was not possible.

When fish from an interview sample were unloaded, the interviewer attempted to make an independent count (or estimate) of the number of the fish sold. The count was recorded along with the interview information for that fisherman and was used if necessary to match interview and sales receipt data.

Estimates of Harvest and Release

Following the commercial fishery, interview data were paired with sales receipts based on commercial fishing permit number, date of landing, and recorded number or pounds of sockeye salmon landed. Landing and interview data were stratified by statistical weeks (24-28) for the analyses. Sampled deliveries were described and compared with total landings based on the numbers of sockeye salmon reported on the sales receipts.

The number of chinook salmon or steelhead harvested or released (T) in statistical week h is estimated by simple expansion of the mean per unit:

$$T_h = N_h \bar{x}_h \tag{1}$$

where N is the total number of landings in the stratum, and $\bar{x}$ is the average number of steelhead or chinook salmon reported per interviewed landing. The variance of T is estimated:

$$V[T_h] = N_h^2 \left(1 - \frac{n_h}{N_h}\right) \frac{\sum_{i=1}^{n_h} (x_{hi} - \bar{x}_h)}{n_h (n_h - 1)} \tag{2}$$

where n is the number of landings interviewed in the strata. Estimates and their variances for the entire fishery are estimated as the sums across strata $\Sigma\, T_h$ and $\Sigma\, V[T_h]$.

The mean per unit estimator (described above for a simple random sampling design) might be bettered by a ratio estimator if a strong correlation exists between the size of interviewed (sockeye salmon) landings and the number of steelhead or chinook salmon reported per interviewed landing. In particular, a ratio estimator provides a better estimate than one based on the mean per unit when

$$\rho > \frac{1}{2} \frac{cv[x]}{cv[y]} \tag{3}$$

where ρ is the Pearson correlation coefficient between x and y and cv is the coefficient of variation (Cochran 1977). In this case, for example, x is the number of chinook salmon retained or released while y is the number of sockeye salmon landed, in interviewed landings.

RESULTS

The set gill net fishery for sockeye salmon at the Situk River opened on June 11, 1990 (Table 1). During the first five openings (Statistical Weeks 24-28), the fishery was open for a total of 516 hours and 57,980 sockeye salmon were taken.

Table 1. Dates, duration, number of permits used, and number of sockeye salmon taken during the first five openings (Statistical Weeks 24-28) of the commercial set gill net fishery at the Situk River, 1990.

Statistical Week	Dates open	Duration (hours)	Number of permits fished	Number of sockeye salmon taken
24	June 11 - June 13	60	50	9,238
25	June 18 - June 22	108	58	14,250
26	June 25 - June 29	108	52	13,873
27	July 1 - July 6	132	59	13,893
28	July 8 - July 12	108	57	6,726
Total		516		57,980

ADF&G imposed non-sale of chinook salmon by emergency order before the first opening and this restriction remained in effect for the entire period. Sale ofsteelhead taken during the fishery was not restricted, and a market was available that paid an average of $0.70 per pound for those fish delivered.

A commercial buying station operated at the Situk Lower Landing during all five of these openings. The station typically opened at 0900-1000 and closed at 1900-2400 on days open to commercial fishing. Interviews were conducted during most, but not all, of the hours that the buying station was open, during all five openings (Table 2). Overall, interviews were conducted during 581 of the 1,323 landings (43.9%). The proportion of landings in which fishermen were interviewed ranged from 21.4% (Statistical Week 28) to 53.6% (Statistical Week 26). Fishermen reported catching and keeping for personal use 176 chinook salmon and five steelhead. They also reported releasing 222 chinook salmon and six steelhead.

Most fishermen during the 1990 fishery landed less than 40 sockeye salmon in a delivery; only a few landings, mostly during the earlier part of the fishery, exceeded 160 fish (Table 3, Figures 5-9). We computed goodness of fit (chi-square) statistics for each Statistical Week to test whether the different sizes of landings were sampled in approximate proportion to their actual frequency of occurrence. Landings of more than 140 fish (Table 3) were pooled into a 140-160+ fish category for the test. Computed probabilities ranged from 0.32 to 0.70 except in Statistical Week 28 ($p=.04$), suggesting that only in Statistical Week 28 was there a strong divergence from proportionate sampling by landing size.

During most interviews, fishermen reported catching no chinook salmon or steelhead (Table 4). The most frequently retained number of chinook salmon was one fish, and no fisherman reported retaining more than four chinook salmon. Landings in which chinook salmon were reportedly released were less frequent, but more than four chinook salmon were reportedly released on 11% of these landings (2.3% of total landings). A single steelhead was reportedly retained for personal use on five landings, and steelhead were also reportedly released on five landings.

Correlation between the size of interviewed landings (numbers of sockeye salmon) and the number of chinook salmon retained ($\rho<-0.001$) or released ($\rho=0.061$) per landing was small. The number of chinook salmon retained or released can therefore be estimated efficiently using mean numbers per landing, since $-0.001 \not> 0.178$ and $0.061 \not> 0.116$, respectively (Equation 3). The average number of chinook salmon retained for personal use per landing (Table 5) ranged from 0.23 (SE = 0.07) to 0.43 (SE = 0.12), while the average number released per landing ranged from 0.28 (SE = 0.09) to 1.05 (SE = 0.46).

The total numbers of chinook salmon and steelhead retained for personal use and released were estimated using mean numbers reported per interview in each Statistical Week (Table 6). During the first five weeks of the Situk River commercial set net fishery for sockeye salmon, a total of 410 (SE = 29) chinook salmon were retained for personal use, while another 574 (SE = 84) chinook salmon were released by fishermen. A total of 12 (SE = 4) steelhead were retained by fishermen for personal use, while another 14 (SE = 5) steelhead were released. Sales receipts indicated that another 21 steelhead were taken in the fishery and sold.

Table 2. Number of total landings, number of interviews, and reported numbers of steelhead and chinook salmon retained for personal use and released during Statistical Weeks 24-28 of the Situk River commercial gill net fishery, 1990.

Statistical Week	Number of landings	Number of interviews	Chinook		Steelhead	
			Kept	Released	Kept	Released
24	157	61	14	20	3	4
25	322	149	36	42	1	1
26	332	178	60	57	1	1
27	325	153	49	61		
28	187	40	17	42		
Total	1,323	581	176	222	5	6

Table 3. Number of landings distributed by numbers of sockeye salmon delivered per landing, Situk River sockeye salmon set gill net fishery, Statistical Weeks 24-28, 1990.

Number of sockeye landed[a]	Statistical Week									
	24		25		26		27		28	
	All[b]	Int[c]	All	Int	All	Int	All	Int	All	Int
20	46	18	76	38	85	55	77	35	59	22
40	41	15	112	51	109	55	100	47	61	11
60	25	7	59	18	71	42	78	41	40	5
80	18	5	44	22	31	11	38	14	19	2
100	9	5	14	10	17	9	16	10	5	
120	5	2	7	4	11	3	11	5	3	
140	7	3	3	2	5	2	1	1		
160	1	1	2	2	3	1	3			
180			2	1			1			
200			2							
300	2	2								
500	1	1	1	1						
1,000	1	1								
1,500	1	1								
Total	157	61	322	149	332	178	325	153	187	40

[a] Upper limit of number landed.
[b] All landings.
[c] Interviewed landings.

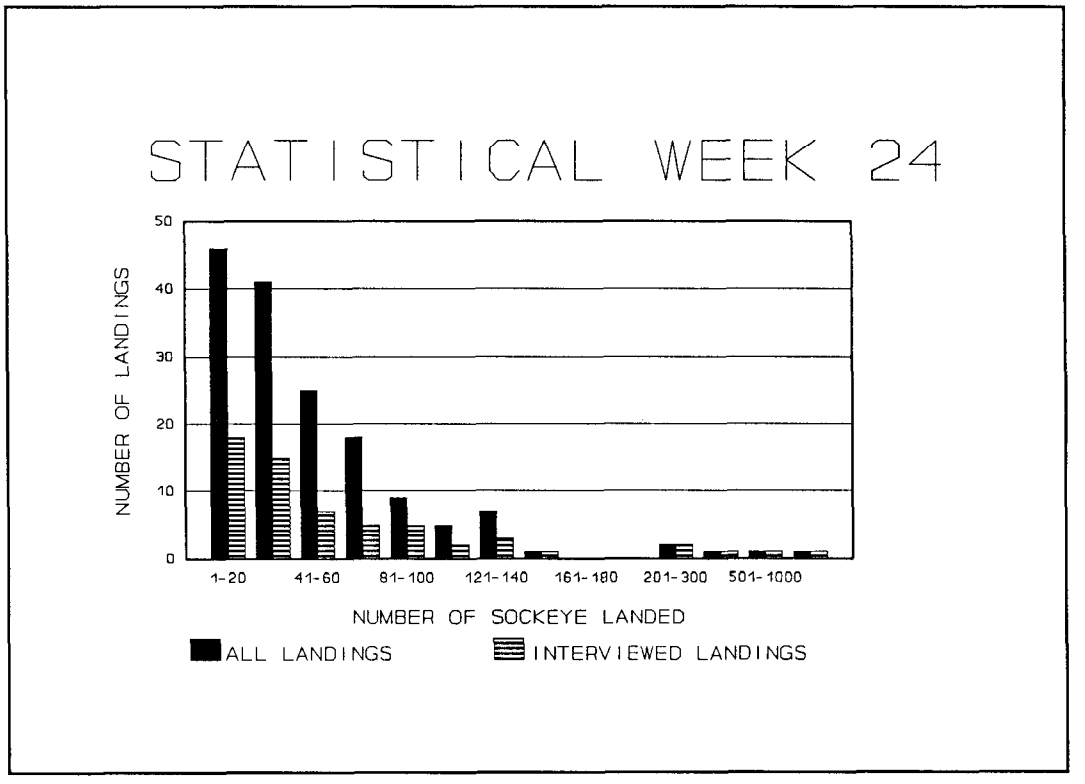

Figure 5. Frequency of numbers of sockeye salmon landed per landing during Statistical Week 24 of the 1990 Situk River commercial set net fishery.

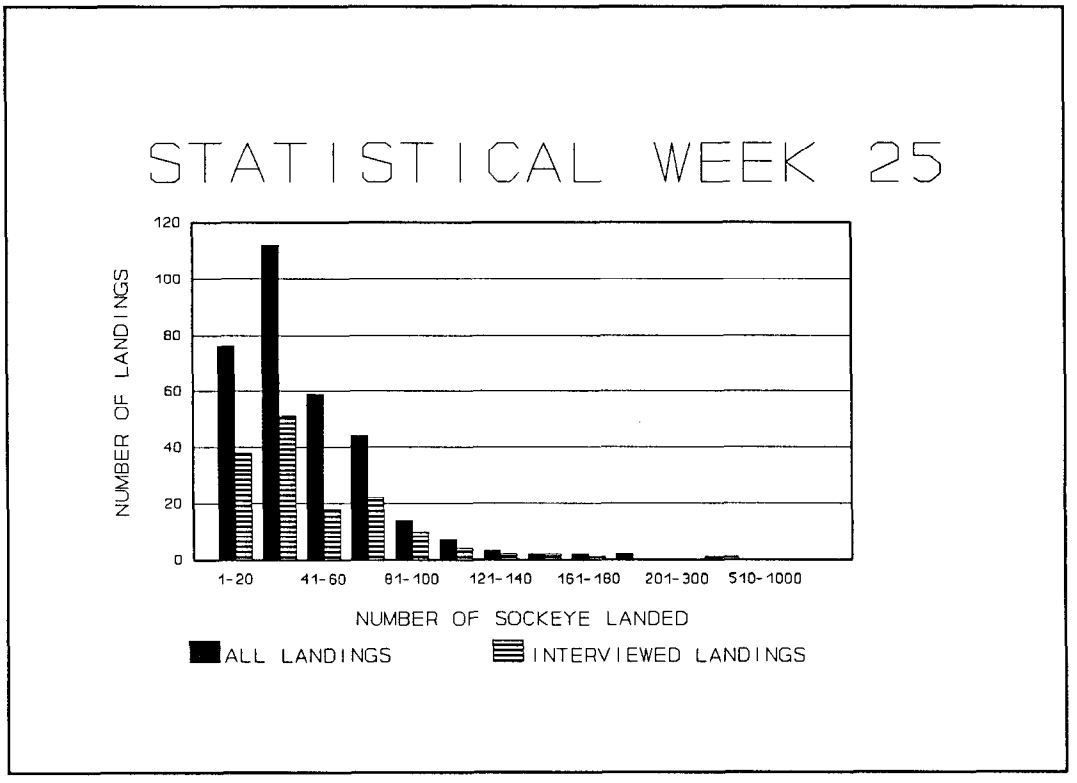

Figure 6. Frequency of numbers of sockeye salmon landed per landing during Statistical Week 25 of the 1990 Situk River commercial set net fishery.

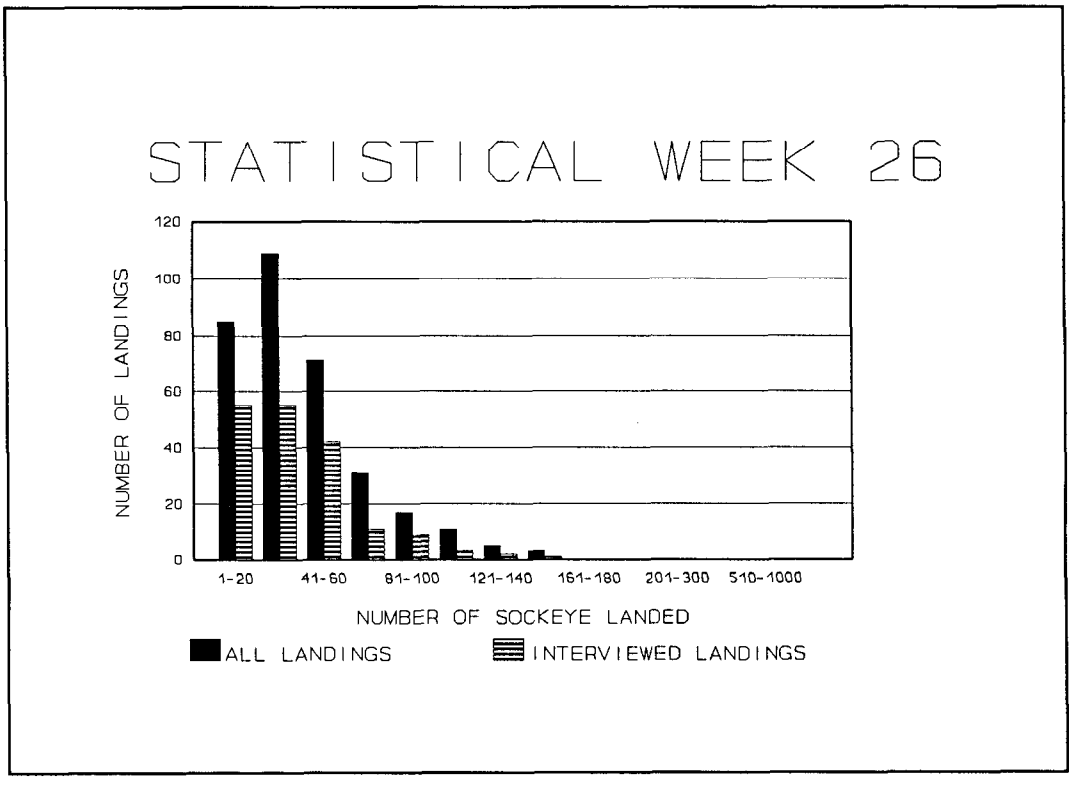

Figure 7. Frequency of numbers of sockeye salmon landed per landing during Statistical Week 26 of the 1990 Situk River commercial set net fishery.

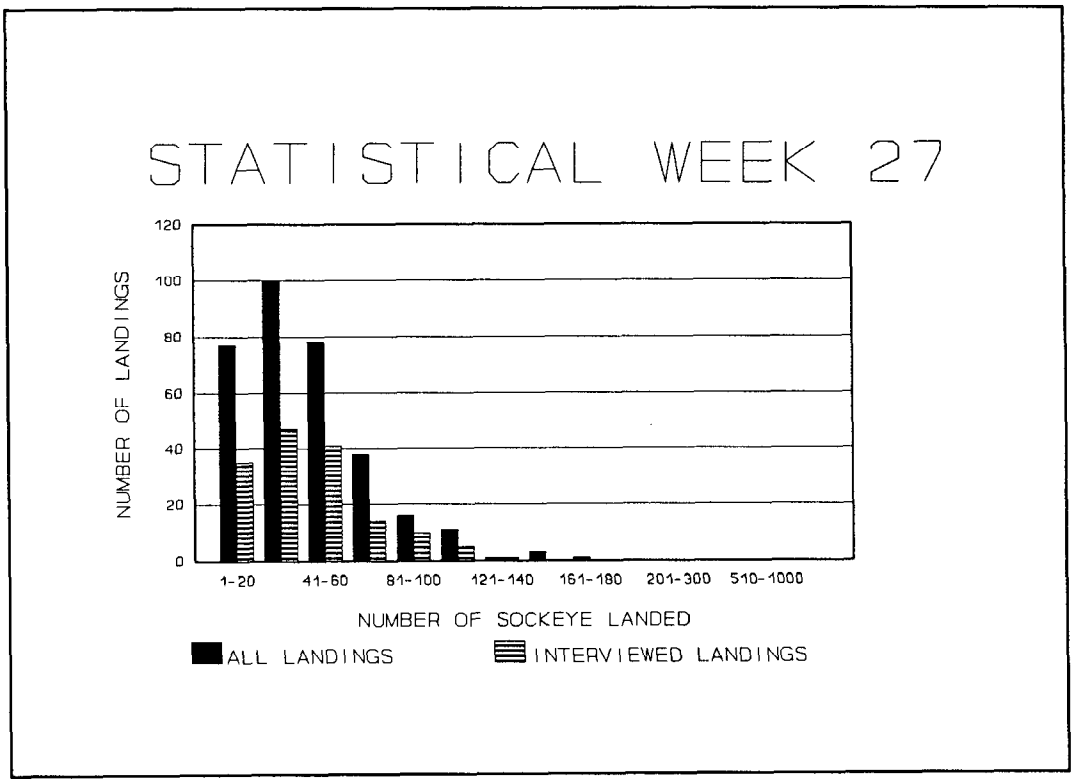

Figure 8. Frequency of numbers of sockeye salmon landed per landing during Statistical Week 27 of the 1990 Situk River commercial set net fishery.

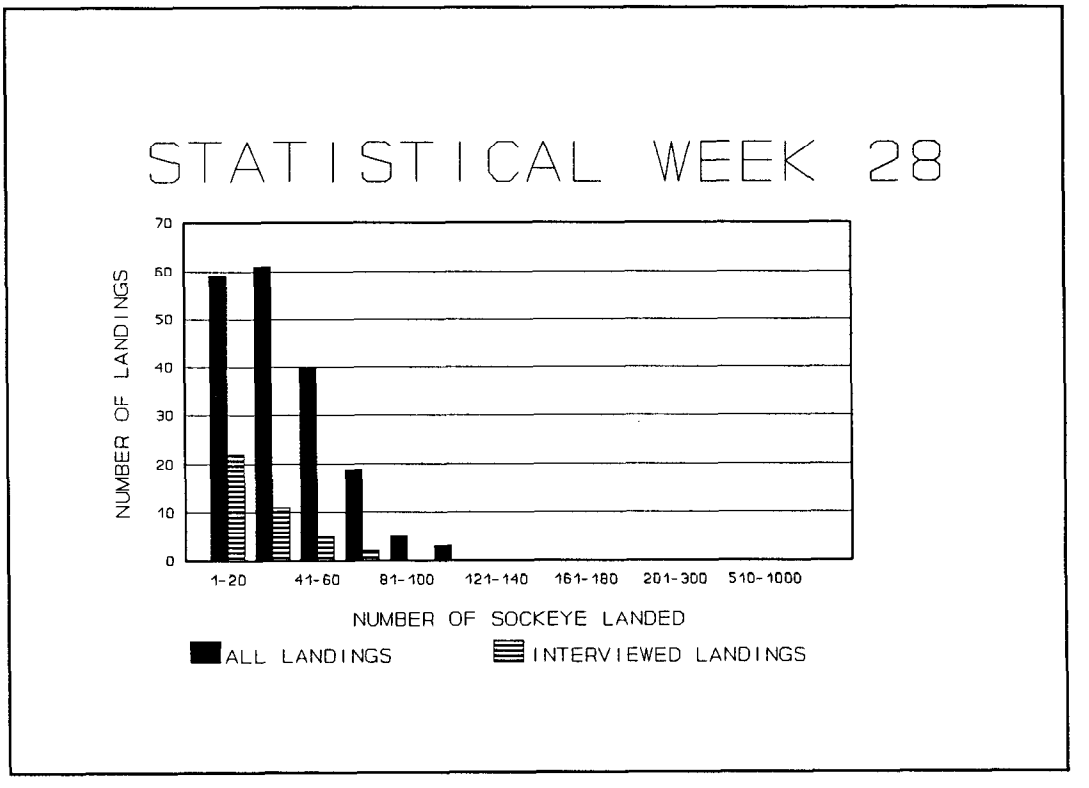

Figure 9. Frequency of numbers of sockeye salmon landed per landing during Statistical Week 28 of the 1990 Situk River commercial set net fishery.

Table 4. Numbers of interviewed landings distributed by the number of steelhead and chinook salmon reportedly retained or released per landing, Situk River set gill net fishery, Statistical Weeks 24-28, 1990.

Number of chinook/steelhead in landing	Number of landings			
	Chinook kept	Chinook released	Steelhead kept	Steelhead released
0	449	481	576	576
1	100	53	5	4
2	22	24		1
3	8	9		
4	2	1		
5		5		
6		2		
7		4		
8				
9				
10		1		
>10		1		
TOTAL	581	581	581	581

Table 5. Numbers of interviewed landings, reported numbers of chinook salmon kept and released, and average number of chinook salmon kept and released per landing of sockeye salmon in the Situk River commercial set net fishery, Statistical Weeks 24-28, 1990.

Statistical Week	Number of landings	Observed chinook		Average chinook per landing			
		Kept	Released	Kept	SE	Released	SE
24	61	14	20	0.23	0.07	0.33	0.15
25	149	36	42	0.24	0.04	0.28	0.09
26	178	60	57	0.34	0.05	0.32	0.06
27	153	49	61	0.32	0.06	0.40	0.09
28	40	17	42	0.43	0.12	1.05	0.46

Table 6. Estimated total numbers of steelhead and chinook salmon retained for personal use, released, and sold during Statistical Weeks 24-28, Situk River commercial gill net fishery, 1990.[a]

	Statistical Week					
	24	25	26	27	28	TOTAL
Chinook kept (personal use)						
Estimate	36	78	112	105	79	410
Variance	77	89	120	189	384	860
SE[b]	9	9	11	14	20	29
Relative precision[c]	0.48	0.24	0.19	0.26	0.48	0.14
Chinook released						
Estimate	51	91	106	130	196	574
Variance	344	435	122	423	5,778	7,102
SE	19	21	11	21	76	84
Relative precision	0.71	0.45	0.20	0.31	0.76	0.29
Steelhead kept (personal use)						
Estimate	8	2	2	0	0	12
Variance	12	3	2	0	0	16
SE	3	2	1	0	0	4
Relative precision	0.87	1.44	1.33	0.00	0.00	0.66
Steelhead released						
Estimate	10	2	2	0	0	14
Variance	24	3	2	0	0	28
SE	5	2	1	0	0	5
Relative precision	0.93	1.44	1.33	0.00	0.00	0.72
Steelhead sold[d]	13	3	4	1	0	21

[a] Sale of chinook salmon was prohibited by emergency order in 1990.
[b] SE = Standard error.
[c] Relative precision (for 95% confidence interval) = 1.96 SE/estimate.

[d] Numbers obtained from fish ticket sales receipts.

DISCUSSION

Since the Situk River commercial set gill net fishery takes place in the Situk/Ahrnklin Inlet and along ocean beaches within one-half mile of the terminus of those rivers, managers have assumed that most of the fish taken in the fishery are of Situk River origin. That assumption is probably not unreasonable given the timing of the fishery and the distribution of effort, but other stocks of fish could be intercepted. Fisheries along outside beaches may intercept fish bound for the nearby Akwe or Alsek rivers, both of which support stocks of sockeye and chinook salmon. In addition, some of the chinook salmon taken in the fishery inside the Situk/Ahrnklin Lagoon could be of Ahrnklin River origin. A few adult chinook salmon have been seen during sockeye salmon escapement surveys of tributaries to the Ahrnklin River, and managers suspect that the river may support a small chinook salmon population (Keith Weiland, ADF&G, Division of Commercial Fisheries, Yakutat, Alaska, personal communication).

The estimates of harvest and release produced from this survey could be influenced by several types of bias. We assume that fishermen honestly reported to interviewers the numbers of chinook salmon and steelhead retained and released. There was no penalty associated with an honest response to our questions, and we developed no reason to suspect a systematic bias of this type. Biased estimates could also result if data from interviews was not representative of all landings. An estimated 80% of the early season Situk River sockeye salmon harvest was landed at the Lower Landing buying station (Steve Henry, Sitka Sound Seafoods, Yakutat, Alaska, personal communication) and we sampled a large proportion (21.4% to 53.6%) of total landings. It was also not difficult in most cases to correlate the numbers and pounds of sockeye salmon recorded for a sampled landing with a sales receipt, so we do not feel compromised by sampling or methodological difficulties.

Both interviews and sales receipts described a declining trend in steelhead catch as the fishing season progressed. Steelhead were encountered most frequently during the first opening (Statistical Week 24), and only one fish was observed in either interviews or sales receipts after the third opening. This trend agrees with the weir record of steelhead emigrations from the Situk River (Appendix A and Figure 10). When the commercial fishery opened on June 11, 92.8% of the total emigration of steelhead from the Situk River had already occurred. By the fourth commercial opening on July 1, 99.5% of the emigration was complete. Of the 260 steelhead that left the Situk River on or after June 11, 33 (12.7%) were later harvested (12 personal use, 21 commercial sale). Commercial fishermen also reported releasing steelhead at a 29.8% rate (14 of 47 fish). Given the availability of a market, we do not know why any steelhead were released by commercial fishermen.

Chinook salmon were encountered in increasing numbers after the commercial fishery began. The combined numbers of chinook salmon retained and released increased each week during the first five commercial openings. The Situk River weir record indicates that chinook salmon began to appear consistently at the weir during the first opening (Appendix A and Figure 11), and 87.7% (1,115 fish) of the recorded chinook salmon escapement (1,272 fish) had occurred before the sixth commercial opening on July 16. The estimated personal use harvest of 410 chinook salmon represented 26.9% of the total return (harvest plus weir escapement) of chinook salmon that had returned to the Situk River by July 16. The total personal use harvest of chinook salmon was undoubtedly greater than 410

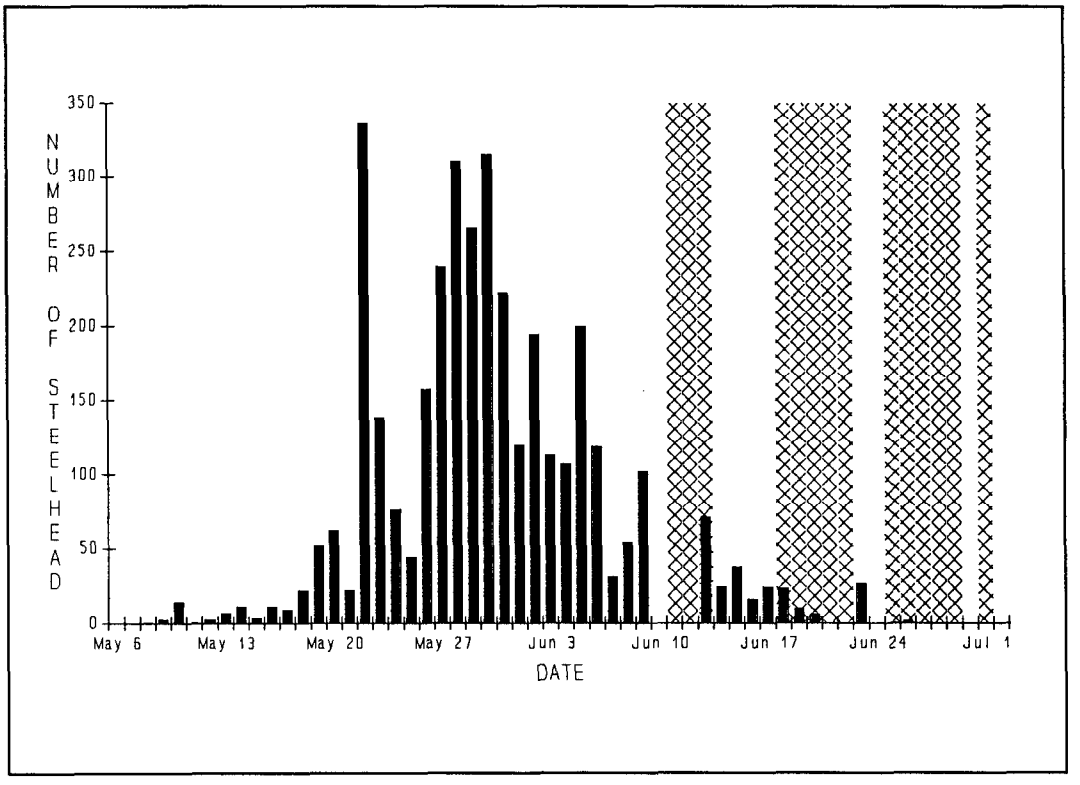

Figure 10. Number of steelhead kelts passed downstream at the Situk River weir during 1990 by date. Hatched bars indicate days that the Situk River commercial set gill net fishery was open.

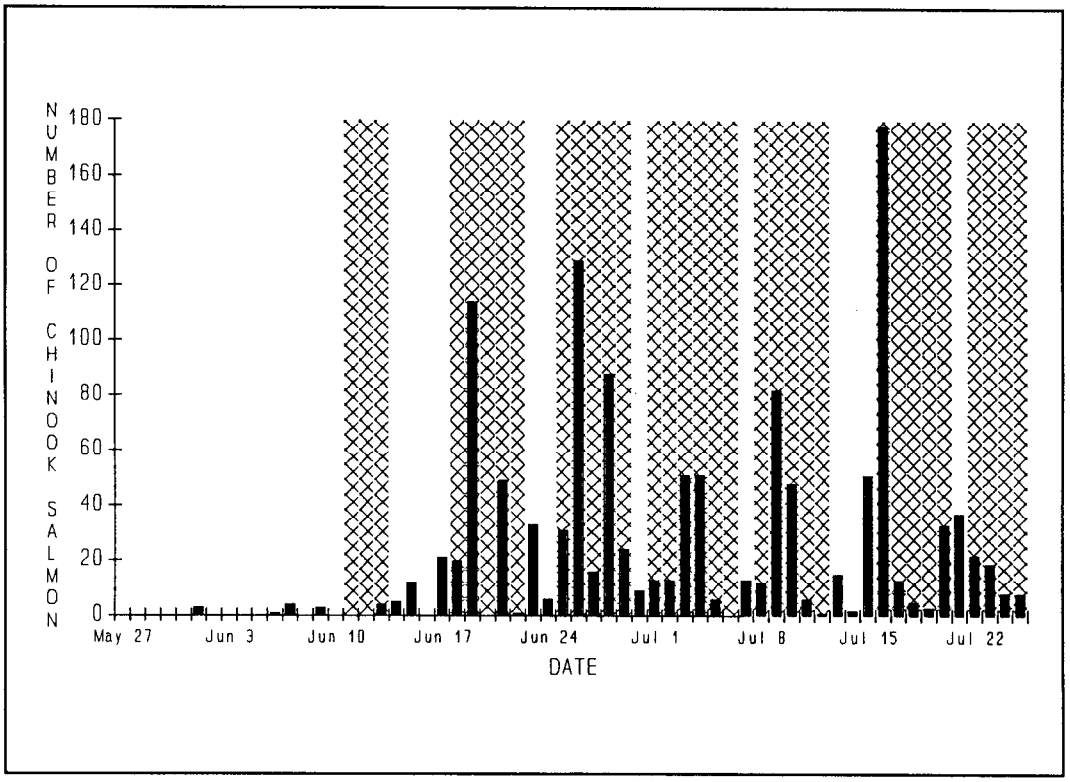

Figure 11. Number of chinook salmon passed upstream at the Situk River weir during 1990 by date. Hatched bars indicate days that the Situk River commercial set gill net fishery was open.

fish, since the fishery continued and chinook salmon escapements were recorded for at least two weeks after this study ended.

Our estimate of the voluntary release rate for chinook salmon is lower than that reported by Weiland (1990) for 1989. During the first five weeks of the 1990 Situk River commercial fishery, 58.3% (574 of 984) of the chinook salmon caught were released. We cannot determine with confidence the contribution, if any, these fish made toward later chinook salmon escapement into the Situk River. None of these salmon were given secondary markings that would identify them as released fish, and we made no attempt to estimate their rate of survival after release.

The Situk River weir became inoperable on July 29 and the remainder of the 1990 escapement of chinook salmon was not counted; 93.3% of the chinook salmon escapement has historically occurred by that date (Scott McPherson, ADF&G, Division of Commercial Fisheries, Douglas, Alaska, personal communication). If the recorded escapement is expanded by this percentage, the total 1990 escapement to the Situk River was an estimated 1,363 chinook salmon. Expansion using the weir count ratio of "large" (3-5 ocean-age) to smaller chinook salmon suggested that the escapement was composed of 676 "large" fish, 532 2-ocean-age fish, and 155 1-ocean-age fish. Thus the escapement of "large" chinook to the Situk River during 1990 was comparable to the escapement of 1989, and substantially below the escapement goal of 1,000-1,400 "large" fish.

The chinook salmon harvest estimates obtained in this study cannot be directly compared to the Situk River escapement goal, primarily because the harvests were not composed solely of "large" (3-5 ocean-age) fish. Analysis of scales collected from 110 chinook salmon taken for personal use during the first five openings of the commercial fishery suggests that only 54.5% of these fish were "large" (Scott McPherson, ADF&G, Division of Commercial Fisheries, Douglas, Alaska, personal communication). If this percentage is applied to the observed harvest, 223 "large" chinook salmon were taken during the first five openings of the commercial fishery.

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APPENDIX A

Appendix A. Numbers of steelhead and chinook salmon counted through the weir operated by the ADF&G Division of Commercial Fisheries on the Situk River, 1990.[a,b]

Statistical Week	Date	Fishery duration (hours)	Steelhead kelts downstream	Chinook salmon upstream
	08-May		1	
	09-May		3	
	10-May		14	
	11-May		1	
	12-May		3	
20	13-May		7	
	14-May		11	
	15-May		4	
	16-May		11	
	17-May		9	
	18-May		22	
	19-May		52	
21	20-May		62	
	21-May		22	
	22-May		336	
	23-May		139	
	24-May		76	
	25-May		44	
	26-May		158	
22	27-May		240	
	28-May		310	
	29-May		266	
	30-May		315	
	31-May		223	
	01-Jun		120	3
	02-Jun		195	
23	03-Jun		113	
	04-Jun		107	
	05-Jun		200	
	06-Jun		119	1
	07-Jun		31	4
	08-Jun		54	

-continued-

Appendix A. (Page 2 of 3).

Statistical Week	Date	Fishery duration (hours)	Steelhead kelts downstream	Chinook salmon upstream
	09-Jun		102	3
24	10-Jun			
	11-Jun	18		
	12-Jun	24		
	13-Jun	18	71	4
	14-Jun		24	5
	15-Jun		38	12
	16-Jun		16	
25	17-Jun		24	21
	18-Jun	18	23	20
	19-Jun	24	10	114
	20-Jun	24	6	
	21-Jun	24		49
	22-Jun	18		1
	23-Jun		26	33
26	24-Jun			6
	25-Jun	18	1	31
	26-Jun	24	2	129
	27-Jun	24		16
	28-Jun	24		88
	29-Jun	18		24
	30-Jun			9
27	01-Jul	18		13
	02-Jul	24		13
	03-Jul	24		51
	04-Jul	24		51
	05-Jul	24		6
	06-Jul	18	1	
	07-Jul			13
28	08-Jul	18		12
	09-Jul	24	9	82
	10-Jul	24	4	48
	11-Jul	24		6
	12-Jul	18		1

-continued-

Appendix A. (Page 3 of 3).

Statistical Week	Date	Fishery duration (hours)	Steelhead kelts downstream	Chinook salmon upstream
	13-Jul			15
	14-Jul		1	2
29	15-Jul			51
	16-Jul	18		178
	17-Jul	24		13
	18-Jul	24		5
	19-Jul	24		3
	20-Jul	18	1	33
	21-Jul			37
30	22-Jul	18	1	22
	23-Jul	24		19
	24-Jul	24		8
	25-Jul	24	2	8
	26-Jul	24		1
	27-Jul	18		7
	28-Jul			1
	Total		3,630	1,272

[a] Information on steelhead weir counts provided via personal communication with Bob Johnson, ADF&G, Division of Sport Fish, Douglas, Alaska. Information on chinook salmon weir counts provided via personal communication with Scott McPherson, ADF&G, Division of Commercial Fisheries, Douglas, Alaska.

[b] Weir rendered inoperable on July 29 due to high water.