

**1995-2003 NECHAKO AND STUART RIVERS
CHINOOK SPAWNER ENUMERATION SUMMARY
NECHAKO FISHERIES CONSERVATION PROGRAM**
Data Report No. M12-1

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INTRODUCTION

Each year since 1988 the Nechako Fisheries Conservation Program (NFCP) Technical Committee has conducted a suite of projects to monitor the population of Chinook salmon (*Oncorhynchus tshawytscha*) that spawn and rear in the Nechako River. The goal of these projects is to provide the information necessary for the NFCP to assess whether or not the Conservation Goal identified in the 1987 Settlement Agreement (Anon, 1987) is being met.

As part of this program of studies to monitor Nechako River Chinook salmon, the Technical Committee has conducted annual spawner enumeration projects on the Nechako and Stuart rivers. Since the primary measure of the Conservation Goal is the number of Chinook salmon returning to spawn in the Nechako River each year, the enumeration project has been designed to provide the most accurate estimate possible of the size, timing and distribution of the run. The information collected from the Nechako River is compared to similar information collected from the Stuart River, an adjacent system unaffected by flow regulation, to assist in identifying potential effects of flow regulation on the Nechako Chinook population. Following several years of study on the Stuart River, the data was found to be inconclusive in meeting that objective and, as such, the NFCP Technical Committee decided to terminate the Stuart River spawner enumeration component of the study after 2003.

This report summarizes Nechako and Stuart River Chinook enumeration data for the years 1995 through 2003 and gauges performance of this data to that of the 1988-1994 study period.

METHODS

Nechako River

Aerial Counts

Nechako Chinook spawn almost exclusively in the 150 km long portion of river between Cheslatta Falls and Vanderhoof (Figure 1). To facilitate analysis of spawner distribution this portion of the river was divided into 16 sections aggregated into three areas - Upper, Middle and Lower river (Figure 2).

Helicopter surveys, beginning at Cheslatta Falls and finishing at Vanderhoof, were conducted once every seven days from mid-August to early October. Typically, 6 - 7 flights were conducted per year, with occasional additional flights being required when conditions for accurate enumeration were poor and needed to be repeated. The helicopter flew at approximately 50 km/hr between 30 to 35 m above the river, circling islands or bars where necessary, or re-orienting its flight path to compensate for glare off the river surface.

Two observers seated on the same side of the helicopter counted all the Chinook spawners and carcasses observed in each of the sections. The observers wore polarized sunglasses to reduce glare off the river surface, used hand-held counters to record their counts, and switched seats on alternate flights to avoid seating bias.

At the beginning of the season, discussion and comparison of fish counts took place between the two observers to ensure consistency in counting methodology, but after this initial comparison the observers counted independently. Each fish observed was assigned to one of three classes and at the end of each section the totals for each class were recorded. Fish were classified according to the following criteria:

- **on redds:** Chinook clearly associated with a redd, or just moving away from a redd as the helicopter approached.
- **migrating/holding:** Chinook observed in a deep pool or moving downstream or upstream at a distance from redds. This included moribund post-spawners drifting downstream or holding near a bank.
- **carcasses.**

The observers compared counts after each flight. Differences in counts were attributed to one observer having missed fish, rather than the other observer counting objects that were not Chinook. Therefore, the higher of the two counts in each section of the river was assumed to be the most accurate and was chosen as the final count for the section.

Flying conditions, weather, visibility and incidental observations of interest were documented. In addition, observations of sockeye salmon (*O. nerka*) and white sturgeon (*Acipenser transmontanus*) were recorded.

Residence Time Observations

Residence time was defined as the number of days from a female's arrival at a redd site to departure, plus one day to account for a half day before first sighting and a half day after last sighting.

Residence time observation sites were located in the Upper and Lower river sections from 1995 to 2002 and only in the Upper river section in 2003 (Figure 2). Observers viewed each site from elevated positions that allowed unobstructed views of the river, using polarized sunglasses to reduce glare.

The appearance and behaviour of female spawners on or near well-defined redds was recorded daily throughout the period of redd occupancy. Although females were not individually marked, it was assumed that any female occupying a position over a redd for a number of days was the same fish. Repeated observations of fish with unusual markings on the same redd over a period of days validated the assumption.

The residence times of males were assumed to be identical to those of females. Actual male residence times could not be measured because males are too transient to be followed over the spawning period.

Escapement Estimate

The Area-Under-the-Curve methodology described by Neilson and Geen (1981) was used to calculate the escapement estimate. To convert observations to an escapement estimate, the

counts of spawners on redds were summed over each of the 16 sections for each survey flight and plotted by date. In the event that spawners were observed on the first and/or last flight, zero counts were added one week before/after the actual flight dates to “zero-out” the count, forming a normal distribution curve. The total number of spawner-days was calculated by integrating the “Area-Under-the-Curve” and was divided by the mean residence time (in days) to obtain an escapement estimate.

Stuart River

Annual tagging efforts were conducted on the Stuart River in Zone D (Figure 3) during the first three weeks of September, primarily at one site located near the Dog Creek confluence. Fish were captured using a tangle net and two types of marks were applied. The primary mark was a numbered tag applied to the left operculum; the secondary mark was a single punch (female) or double punch (male) of the right operculum. Date, tag number, sex and release condition were recorded for each fish.

Typically, carcass recovery work was conducted by two crews working both sides of the river starting at Zone A (at outlet of Stuart Lake) and continuing downstream to the bottom of the sampling section, terminating at either Zone E (1995), F (1996-2000, 2002) or G (2001, 2003) (Figure 3). Carcass recovery was conducted across the period of die-off and effort was equally distributed throughout the study area. The number of marked and unmarked fish of each sex recovered in each zone was recorded by date, along with the tag number where applicable. Annual recoveries of males and females are displayed, by zone in Table 5.

A post-season comparison of tag application and carcass recovery data was conducted to detect any instances of sex identification error. When a discrepancy was identified, it was assumed that the determination of sex during carcass recovery was correct, since this could be confirmed by abdominal incision and internal examination, whereas determination of sex during tag application was strictly based on morphology.

Tag application data were corrected for sex identification errors following the methods identified by Staley (1990). Adjusted Peterson estimates (Ricker 1975) were calculated separately for males and females, then combined to yield the total population estimate (Table 7). Jacks were excluded from these calculations.

All recovered carcasses were examined for adipose fin clips (evidence of a hatchery raised fish) and the results were provided to the DFO Salmonid Enhancement Program to assist in their evaluation of the Fort St. James hatchery program.

RESULTS

Nechako River

Between 1995 and 2003, annual Nechako River Chinook escapement estimates varied from 1,685 to 5,785 fish, with a mean annual escapement estimate of 3,004 over the time series (Figure 4). In addition, the annual escapement estimate met the minimum escapement target of 1,700 spawners in 8 of the 9 years covered in this summary report. These estimates were derived from data collected during helicopter overflights and residence time studies (Appendices 1 and 4, respectively), utilizing the Area-Under-the-Curve calculations presented in Appendix 5. Summaries of these data are presented in the sections below.

Aerial Counts

Typically, a total of between 6 or 7 weekly helicopter overflights were conducted each year, between late August and early October, inclusive. Flights commenced at Cheslatta Falls in the late morning and concluded at Vanderhoof in the early afternoon. Occasionally more flights were required due to poor visibility caused by unfavorable environmental conditions, with repeat flights occurring as soon as conditions improved.

Peak live and peak spawning observations typically occurred during the third week of September (Table 1), with spawning being completed by the first week of October (Appendix 2). Counts of “total live” fish and fish “on redds” exhibited a normal timing distribution through all years except 2003, when the arrival of fish was earlier than normal and peak spawning was slightly delayed.

Observed spawner distribution by flight date (Appendix 2) shows that Chinook spawners move onto redds in considerable numbers in all three river areas during the second week of September, with peak observations occurred between September 9th -18th in the Upper and Middle areas, and the following week in the Lower area. Peak counts varied from 834 (1995) to 4,807 (2001) spawners, with a mean of 1,968 fish (Table 2). Overall mean observed spawner distribution by area over the study period was 53.7% (S.D. 6.2) in the Upper area, 27.6% (S.D. 2.3) in the Middle area and 18.8% (S.D. 5.6) in the Lower area (Table 3).

Residence Time Observations

Residence time studies were carried out each year during the reporting period. The number of observations varied from 10 in 1997 to 211 in 2001, with a mean of 112 observations per year over the reporting period (Table 4). The number of observations occurring each year tended to correlate with the number of female Chinooks spawning in the observing areas.

Mean residence time was calculated separately for fish observed at the Upper, Middle and Lower study sites (Figure 2). Both upper and lower sites were utilized for observations from 1995 to 2002, while just the upper sites were observed in 2003. Based on the large overlap in 95% confidence intervals observed in each study year, it was considered valid to group the individuals from all three study areas into one sample to calculate an overall mean residence time. The annual mean residence times varied from 10.3 to 11.9 days over the time series covered in the reporting period, while the mean of the mean time was 11.0 days (n=9, SD=0.53).

Escapement Estimate

Following the AUC methodology, the total annual escapement estimates were determined by dividing the calculated number of spawner-days by the observed mean residence time. If spawners were observed on both the first and last flights in any given year, a data point would be added either before the first flight or after the last flight to “zero-out” the curve.

Annual Area-Under-the-Curve values varied from 17,535 spawner-days in 1995 to 66,530 spawner-days in 2001, with a mean value of 33,084 spawner-days. Dividing the number of spawner-days by the corresponding annual mean residence time for the corresponding year generated total annual escapement estimates ranging from 1,686 to 5,785 fish. The mean escapement estimate for the 1995 to 2003 reporting period was 3,004 spawners (Figure 6).

Stuart River

The peak Stuart River Chinook mark-recapture escapement estimate during the reporting period was 16,130 fish (2003) while the lowest escapement estimate of 3,045 spawners occurred in 1999. The calculated mean escapement estimate for the 1995 to 2003 study years is 6,594 spawners. The mark-recapture escapement estimates were derived from data collected during tag application and carcass recovery activities (Tables 5 and 6), utilizing the mark-recapture

calculations presented in (Ricker, 1975). Summaries of these data are presented in the sections below.

Tag Application

For the sampling years 1995 to 2003, tags were applied to fish exclusively in Reach 4 (Reach D in 1996) over a 2 to 3 week period between August 29 and September 20. There was a large variation in the number of effective tags applied during each of the sampling years covered in this report, from a low of 110 total effective tags being applied in 1999, to 775 in 1996. A disproportionate number of males were tagged compared to females over the time series, with a mean of 172 males (max. 347, min. 84) vs. 115 females (max. 428, min. 26) being tagged each year. The mean total number of tags being applied per year over the 1995 to 2003 sampling period was 287. Tag application information by year is displayed in Table 6.

Carcass Recovery

The carcass recovery portion of the study occurred between September 9th and October 6th for the 1995 to 2003 sampling years, with the number of carcasses recovered by sex being tallied each year. The fewest number of carcasses recovered during the time series in 1999 when 239 males and 304 females (total = 543). The maximum number of recoveries occurred in 2003 when 1,959 males and 1,992 females were recovered, for a total recovery of 3,951 carcasses. The mean number of carcasses recovered over the 9 year reporting period was 1,607 (691 males, 916 females) (Table 6).

Included in the total number of carcasses recovered were tagged fish, with tag recoveries by sex and zone being documented (Table 5). The percentage of recovered male versus female fish possessing tags varied among study years, with a mean of 6% of males carcasses possessing tags (min. 2.4%, max. 11.6%) and 3.5% for females (min. 1.2%, max. 9.3%). The percentage of effective tags recovered each year also varied with a minimum recovery of 13.6% (1999), a maximum recovery of 40.5% (1995) and a 1995 to 2003 mean of 23.2%. There was a significant difference in the mean percentage of tags recovered from males versus females over the study period, with 20.3% of tagged males being recovered while 29.0% of tagged females were recovered (Table 5).

Spatial bias in the sample was examined by comparing mark incidences in the various recovery zones. A Chi-square test was used to determine that the distribution of marked and unmarked

carcasses between the recovery zones was not proportionate ($p < 0.001$). The analysis indicates that tag application and distribution was not representative of the spawning population. Data from the 2001 sampling year was not of sufficient quality to analyze in this manner as zone of recovery for most of the recovered fish was not accurately documented.

Any jacks sampled during carcass recovery were excluded from the dataset used to generate the escapement estimate.

Escapement Estimate

Adjusted Peterson estimates were calculated separately for males and females, and then combined to yield the total population estimate.

DISCUSSION – COMPARISON TO PREVIOUS YEARS

Nechako River

A comparison of 1995 to 2003 Nechako River Chinook enumeration data was made to data collected by the NFCP each year since 1988 (NFCP M88-3 and M89-1 to M94-1).

Since flights are conducted on a weekly basis, it is unlikely that the dates of the peak spawning observation in any given year are coincident with the actual timing of peak spawning activity. However, comparison of the current range of peak observations for 1995 to 2003 against the range observed in previous years provides an indication of potential large-scale (more than a week) shifts in timing. For the 1995 to 2003 time period, annual peak observations in the Nechako River occurred between September 9th -18th flight dates, which is within the expected range of September 10th to 20th observed between 1988 and 1994 (Table 2).

The distribution of spawners across the three river areas (Upper, Middle, Lower) for the years 1995-2003 were compared to the mean of the previous 6 years (Figure 4). Comparing observations collected between 1995 and 2003 to the mean values for the 1988 to 1994 time series, the relative distribution of spawners was higher than the mean but fell within the previously observed ranges in both the Upper and Middle areas. In contrast, the relative distribution of spawners in the Lower area was lower than the previously identified minimum value, indicating a shift in spawning area preference to the Upper and Middle areas (Table 3).

A comparison of mean female residence times and 95% confidence intervals indicated that the mean residence time of 11.0 days observed in 1995 to 2003 was not significantly different from the mean observation (9.8 days) collected from 1989 to 1994 time series. Although residence time was fairly consistent from year to year, there was significantly less difference among years in the 1995 to 2003 series (10.3-11.9 days) than was observed between 1988 and 1994 (8.9-11.7 days) (Figure 5).

The mean 1995 to 2003 escapement estimate of 3,004 was within the 1987 Settlement Agreement target population range of 1700-4000. The minimum escapement target was met for all years within this time series, except for 1995 when 1,686 spawners were enumerated (Figure 6). Simply incorporating uncertainty associated with the 95% confidence limits around the mean residence time (10.4 ± 0.83 days) for that year results in an estimate as high as 1,832, so no further analysis to determine significance of the difference between the escapement estimate of 1,686 and the lower limit of the target population was conducted.

Stuart River

Information is collected from the Stuart River as a comparison to the Nechako River, to assist in identifying potential effects of flow regulation on the Nechako Chinook population. The geographic proximity of the two rivers means that Chinook returning to the Stuart River most likely experience similar migration timing, ocean conditions and harvest rates as Nechako River Chinook. Given these assumptions, identified trends or anomalies in the Nechako population that were absent from the Stuart might be attributable to factors intrinsic to the Nechako River, but similarities would likely indicate extrinsic factors unrelated to flow regulation.

For the 1995 to 2004 period, the comparison of information collected from the Nechako to previous years did not identify any significant trends or anomalies, therefore it was not necessary to use the information collected from the Stuart to identify possible intrinsic vs. extrinsic effects. However, the data are documented in this report in the event that longer-term analyses are required in the future.

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Nechako River spawner count data was collected by Jason Hwang (1996, 1998), Dale Desrochers (2000-02) and Byron Nutton 1999-03) of DFO; Harry Goldberg (1995-96), Bill Rublee (1995) and Arne Lorenz (1995) of Triton Environmental Consultants Ltd; and Dan Bouillon (1997-2000), Colin Barnard (1995, 1997-03) and Justus Benckhuyzen (2001/02) of Rio Tinto Alcan.

Nechako River residence time data was collected by R.A. Poile and Reid Schrul (1995), Bonny Lee Brokenshire and Jason B. (1996) Steve Evenden (1997-2002), Chris Birkett-Roberts (1998-99), Doug Dafoe (2000), and Rhonda Thibeault (2001-02).

Stuart River tag application and carcass recovery was carried out by members of the Nak'azdli Band (1995-03), BioTerra Consulting (1995), Dan Clark (1996), Jim De La Mare (1998-99), and Ecofor Consulting (2000-03).

Rhonda Thibeault and Liz Murphy assisted with data compilation from 1995-2003.

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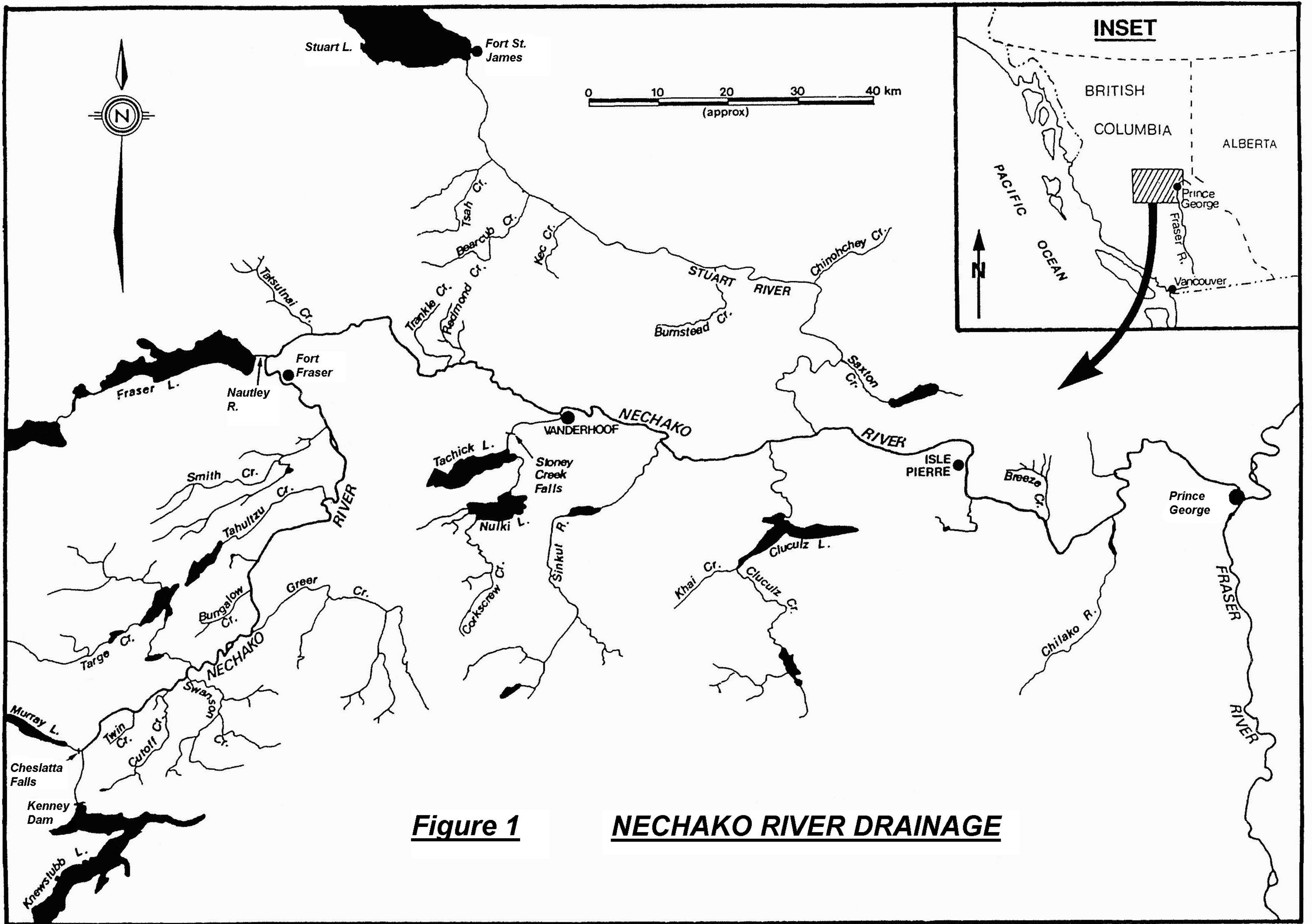
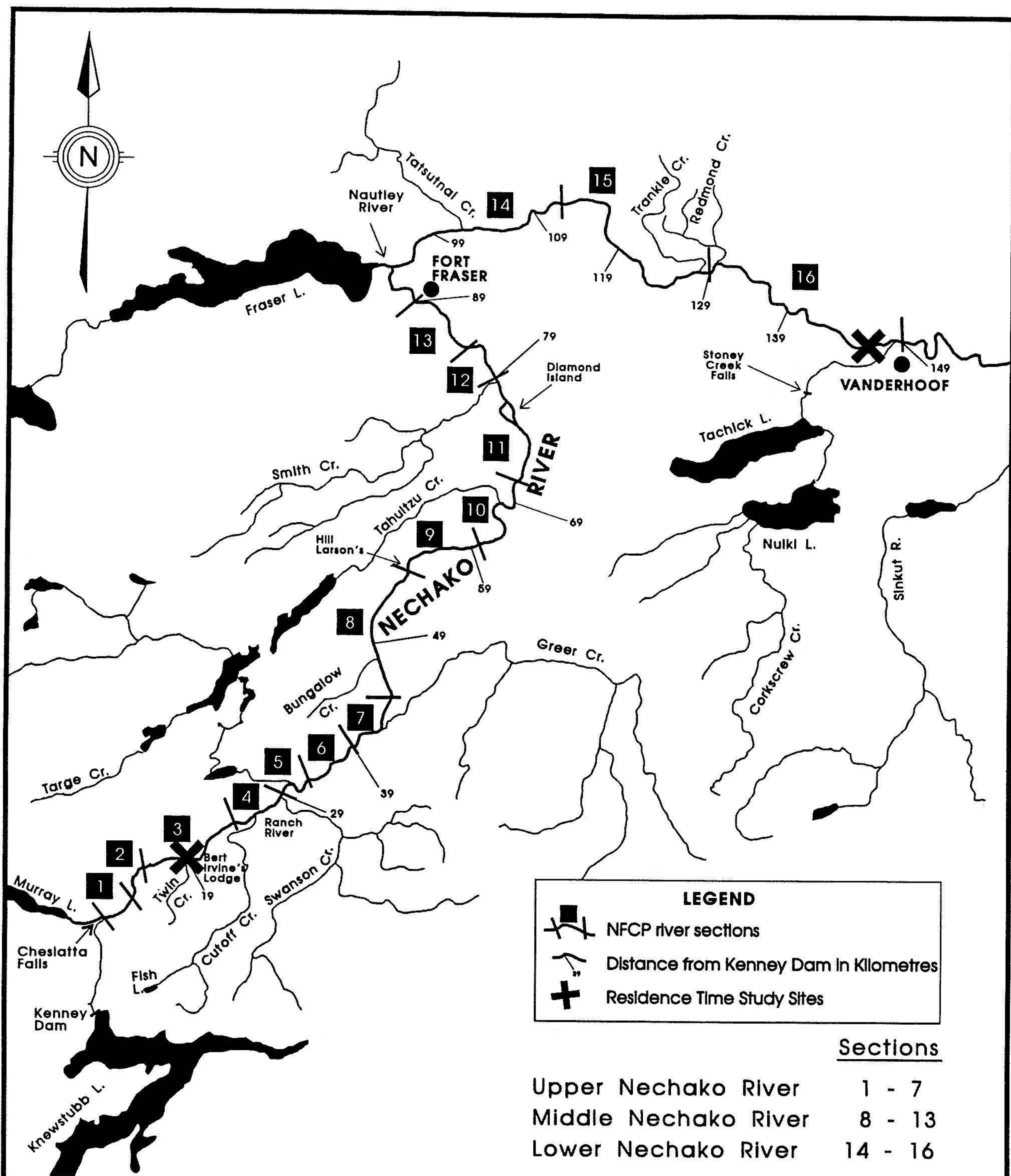


Figure 1

NECHAKO RIVER DRAINAGE



Nechako Fisheries Conservation Program

0 25 km



FIGURE 2. NECHAKO RIVER CHINOOK SPAWNING STUDY AREA

Figure 3

STUART RIVER CHINOOK
SPAWNING STUDY AREA

LEGEND

 river sections

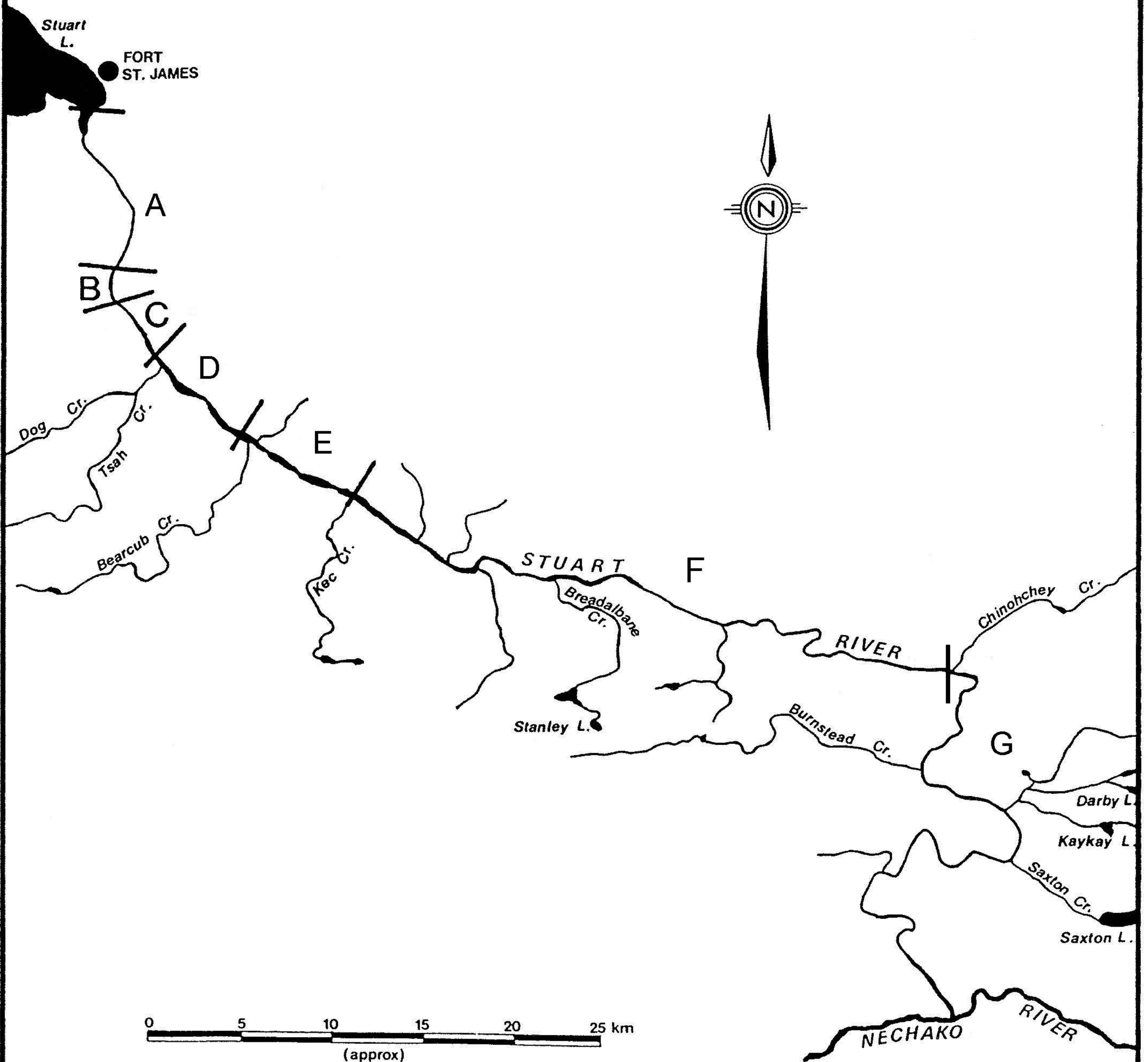


Table 1
Nechako River Chinook Peak Spawner Count Flight
Dates, 1995-2003

Year	Peak Flight
1995	15-Sep
1996	11-Sep
1997	10-Sep
1998	9-Sep
1999	15-Sep
2000	13-Sep
2001	14-Sep
2002	18-Sep
2003	17-Sep
1995-2003 Earliest	9-Sep
1995-2003 Latest	18-Sep
1988-1994 Earliest	10-Sep
1988-1994 Latest	20-Sep

Table 2

Nechako River Chinook Peak Spawner Counts, 1995-2003

Year	Peak Count
1995	834
1996	1,342
1997	1,220
1998	1,045
1999	1,070
2000	2,466
2001	4,807
2002	1,976
2003	2,954
Mean	1,968
Lowest	834
Highest	4,807

Table 3
 Nechako River Chinook Spawner Distribution by Area, 1995-2003

Year	Upper	Middle	Lower	# observations
1995	47.7	27.3	24.9	2505
1996	54.9	26.2	18.9	3177
1997	56.8	30.5	12.7	3341
1998	42.9	30.1	27.1	3341
1999	58.8	23.4	17.9	3049
2000	59.2	29.1	11.7	5030
2001	57.4	27.3	15.3	9673
2002	58.7	25.5	15.8	5492
2003	46.5	28.7	24.8	9673
1995-2003 mean	53.7	27.6	18.8	
1995-2003 min	42.9	23.4	11.7	
1995-2003 max	59.2	30.5	27.1	
1988-1994 mean	42.1	23.5	34.4	
1988-1994 min	29.8	17.2	26.0	
1988-1994 max	56.5	29.3	48.7	

Table 4
 Nechako River Chinook Mean Residence Time, 1995-2003

Year	Mean	95%	n
1995	10.4	0.83	58
1996	10.9	0.69	62
1997	11.9	2.55	10
1998	10.5	0.86	61
1999	11.1	0.60	117
2000	11.0	0.67	177
2001	11.5	0.35	211
2002	11.2	0.43	137
2003	10.3	0.43	175
95-03 mean	11.0		
SD	0.53		
min	10.3		
max	11.9		
count	9		
88-94 mean	9.8		
SD	1.06		
min	8.9		
max	11.7		
count	6		

Table 5
Stuart River Carcass Recoveries By Sex and By Zone (1995-2003)

Zone	1995		1996		1997		1998		1999		2000		2002		2003		Average		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
A	29	64	23	71	37	57	27	27	5	11	6	41	11	15	52	59	24	43	67
B	56	96	19	57	63	124	26	34	12	17	15	50	21	41	100	100	39	65	104
C	110	133	117	227	285	301	57	50	56	72	63	164	88	142	354	300	141	174	315
D	286	461	274	553	360	432	114	157	102	133	115	231	137	229	701	921	261	390	651
E	169	239	132	210	84	92	77	84	25	27	82	95	34	33	267	187	109	121	230
F			411	475	125	104	91	99	39	44	78	113	79	70	436	382	180	184	364
G											18	24			61	43	40	34	73
Average	130	199	163	266	159	185	65	75	40	51	54	103	62	88	282	285	113	144	258

Note: 2001 data inconclusive and unusable

Table 6
Stuart River Chinook Tagging Data by Sex, 1995-2003

Year	<u>Number of Effective Tags Applied</u>			<u>Number of Recovered Tags</u>			<u>% of Tags Recovered</u>		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1995	116	69	185	39	36	75	33.6	52.2	40.5
1996	347	428	775	111	148	259	32.0	34.6	33.4
1997	149	72	221	38	35	73	25.5	48.6	33.0
1998	183	122	305	36	18	54	19.7	14.8	17.7
1999	84	26	110	9	6	15	10.7	23.1	13.6
2000	227	87	314	30	18	48	13.2	20.7	15.3
2001	137	66	203	19	9	28	13.9	13.6	13.8
2002	92	68	160	11	20	31	12.0	29.4	19.4
2003	215	97	312	47	23	70	21.9	23.7	22.4
Average	172	115	287	38	35	73	37.8	34.8	23.2
max	347	428	775	111	148	259	33.6	52.2	40.5
min	84	26	110	9	6	15	10.7	13.6	13.6

Table 7

Stuart River Mark/Recapture Estimate Data, 1995-2003

Year	<u>Effective Tags Applied</u>		<u>Recovered Carcasses</u>		<u>Recovered Tags</u>		<u>M/R Estimate</u>		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
1995	116	69	645	993	39	36	1780	1961	3741
1996	347	428	957	1591	111	148	3403	3756	7159
1997	149	72	952	1110	38	35	3348	2478	5826
1998	183	122	392	451	36	18	1808	2926	4734
1999	84	26	239	304	9	6	2304	741	3045
2000	227	87	374	718	30	18	2552	3973	6525
2001	137	66	335	554	19	9	2237	5397	7634
2002	92	68	367	530	11	20	2607	1947	4554
2003	215	97	1959	1992	47	23	7441	8689	16130
Ave. 95-03	172	115	691	916	38	35	3053	3541	6594
max	347	428	1959	1992	111	148	7441	8689	16130
min	84	26	239	304	9	6	1780	741	3045

Figure 4
Nechako River Chinook Spawner Distribution by Area, 1995-2003

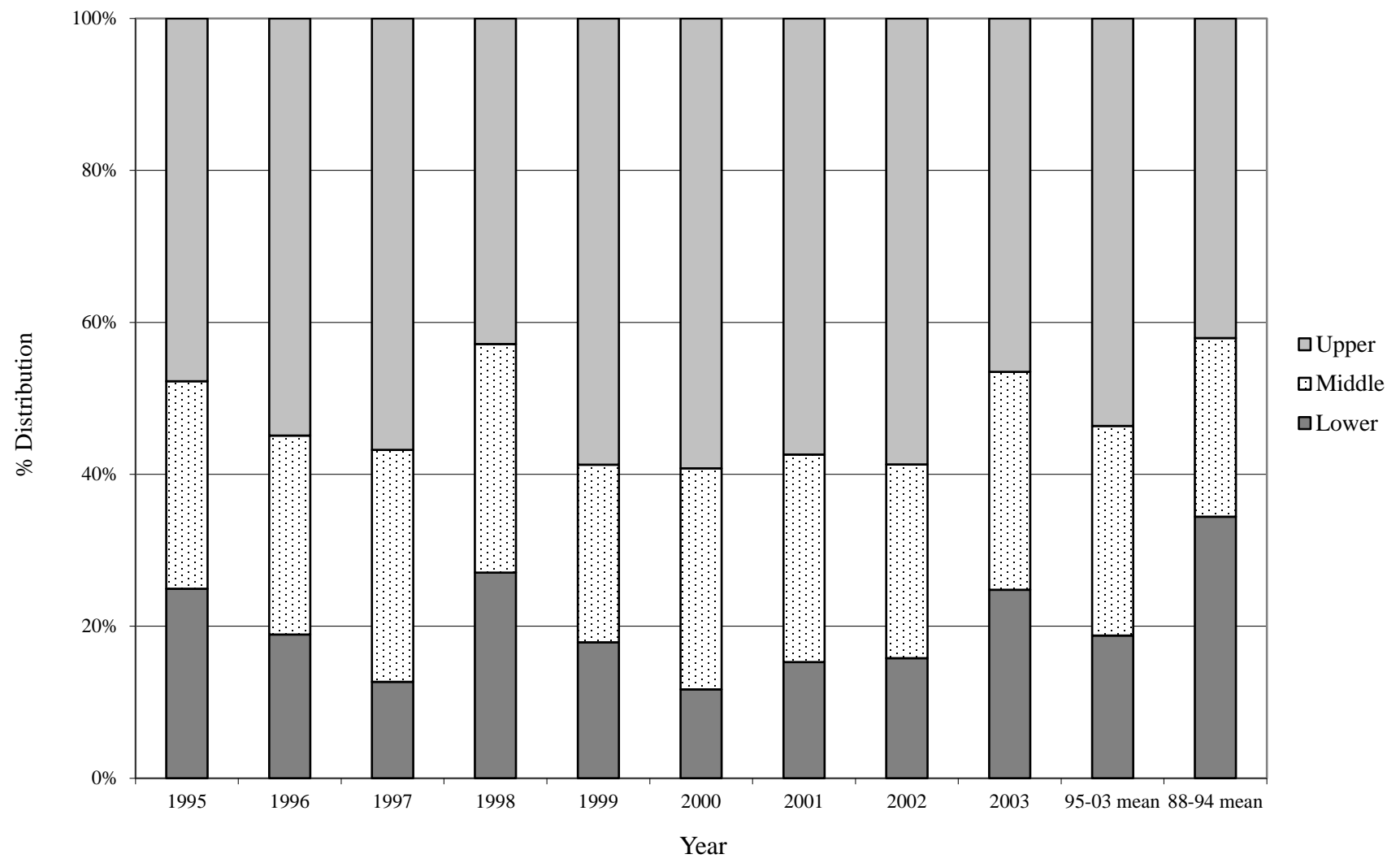


Figure 5
Nechako River Chinook Mean Residence Time, 1995-2003

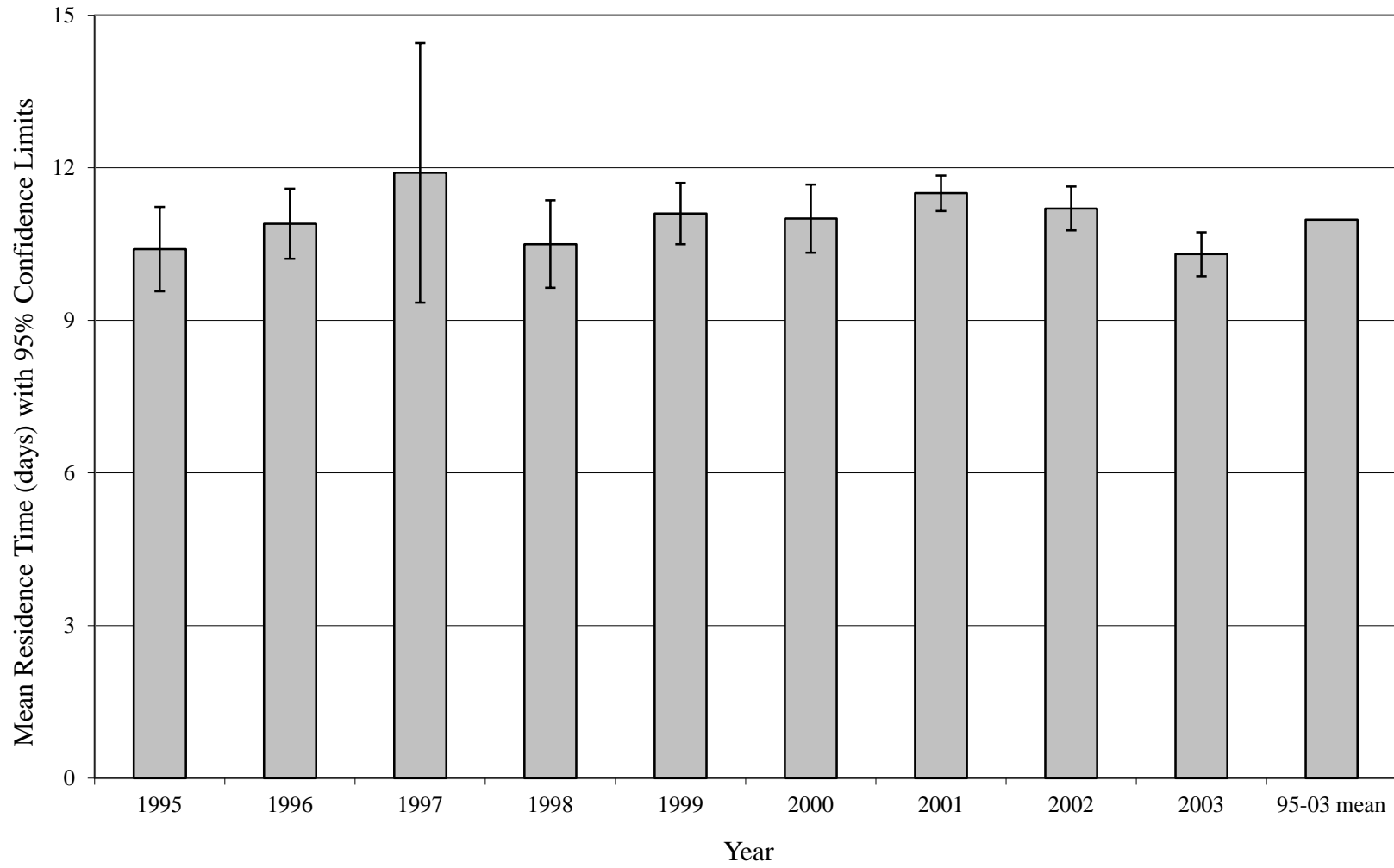


Figure 6
Nechako River Chinook Escapement Estimates, 1995-2003

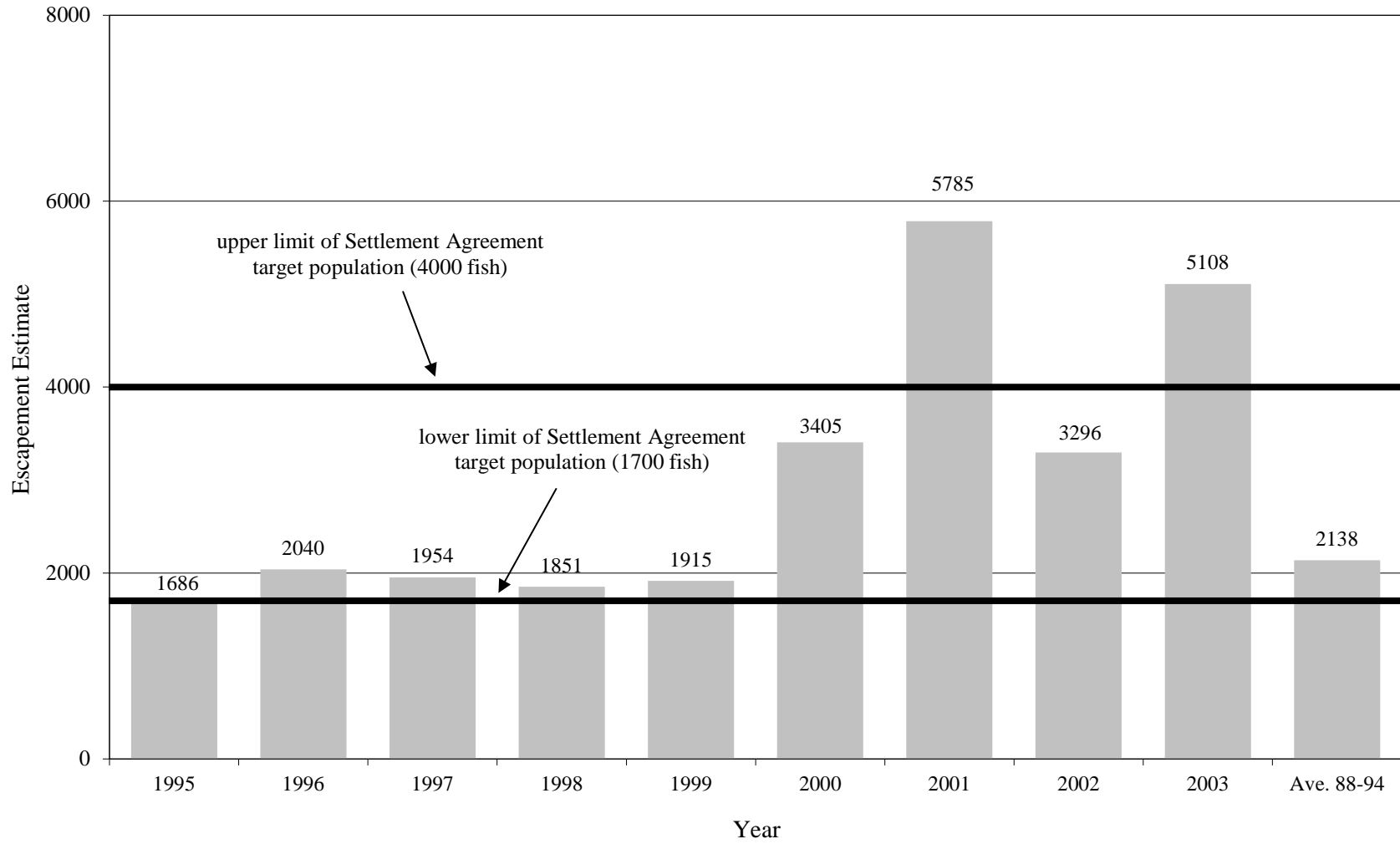
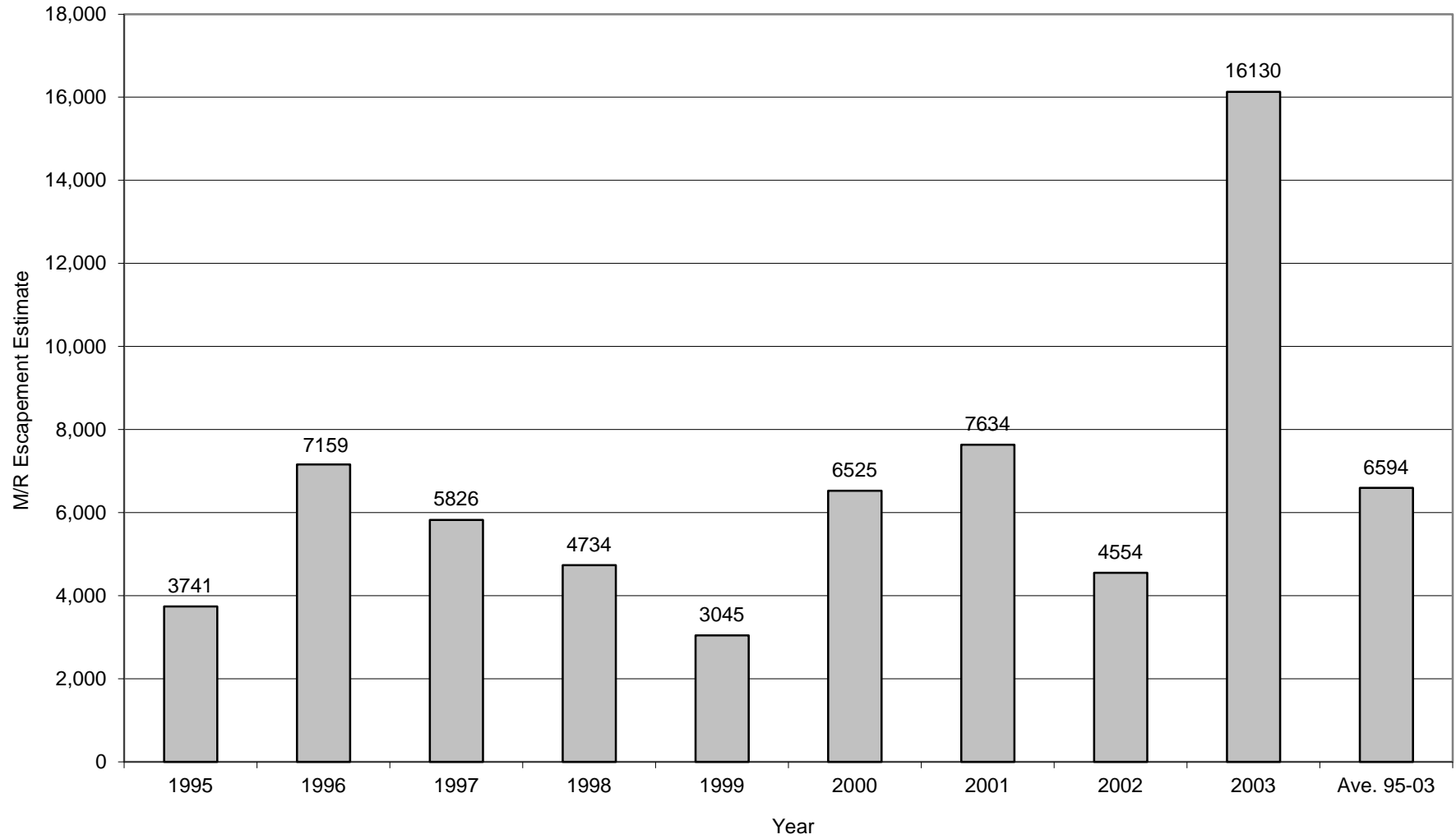


Figure 7
Stuart River Chinook Mark/Recapture Escapement Estimates, 1995-2003



Flight #: 1
 Date: 25-Aug-95
 Pilot:

Observers Representing		Front: Harry Goldberg ALCAN						Back: Colin Barnard DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:51	good	0	0	0			good	0	0	0			0	0
2	10:56	good	0	0	0			good	0	0	0			0	0
3A	11:01	good	0	0	0			good	0	0	0			0	0
3B	11:13	good	0	0	0			good	0	0	0			0	0
4	11:28	good	4	19	0			good	8	17	0		50	8	25
5	11:46	good	0	0	0			good	0	0	0			0	0
6	11:57	good	6	15	0			good	11	12	0			11	23
7	12:24	good	0	0	0			good	0	0	0			0	0
8	13:45	poor	0	1	0			poor	0	0	0			0	1
9	13:57	poor	0	1	0			poor	0	1	0			0	1
10	14:07	poor	0	6	0			poor	0	6	0			0	6
11	14:24	poor	2	6	0			poor	0	8	0			2	8
12	14:38	poor	0	1	0			poor	0	2	0			0	2
13	14:45	poor	0	1	0	35		poor	0	2	0	40		0	2
14	15:00	poor	0	0	0			poor	0	0	0			0	0
15	15:13	poor	0	4	0	55		poor	0	5	0	50		0	5
16	15:57	poor	0	7	0	11		poor	0	11	0	40		0	11
Total			12	61	0				19	64	0			21	84
Weather am:								high, very broken, sunny, light winds							
Weather pm:								stiffer winds, high broken/sunny							
Comments:								down at Ft Fraser 1239-1345 some chinook holding below Vanderhoof bridge							

Flight #: 2
 Date: 1-Sep-95
 Pilot:

Observers Representing		Front: Colin Barnard DFO						Back: Harry Goldberg ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	9:59	good	0	8	0	150		good	0	7	0	150		0	8
2	10:05	good	0	0	0			good	0	1	0			0	1
3A	10:09	good	0	69	1			good	0	72	1			0	72
3B	10:19	good	0	54	0			good	2	49	0			2	54
4	10:30	good	0	24	0			good	2	29	0			2	31
5	10:43	good	0	48	0			good	2	46	0			2	48
6	10:48	good	5	25	0			good	5	31	0			5	36
7	10:59	good	0	9	0			good	0	11	0			0	11
8	11:09	fair	0	4	0			fair	0	4	0	2		0	4
9	11:15	fair	0	13	0			fair	0	12	0			0	13
10	11:30	fair	0	11	0			fair	0	16	0			0	16
11	11:42	fair	11	5	2			fair	11	6	2			11	17
12	13:05	fair	9	47	0			fair	8	51	0			9	59
13	13:11	fair	10	34	0	100		fair	0	43	0	60		10	44
14	13:27	fair	0	72	0	250		fair-poor	6	63	1	208		6	72
15	13:52	fair	0	67	4	500		fair-poor	0	57	3	436		0	67
16	14:25	fair	0	51	1	750		fair-poor	0	39	1	598		0	51
Total			35	541	8				36	537	8			47	604
Weather am:	clear and calm/air temp at 0954 = 14 C						clear, sunny								
Weather pm:							clear, sunny								
Comments:															

Flight #: 3
 Date: 8-Sep-95
 Pilot:

Observers Representing		Front: Bill Rublee ALCAN						Back: Colin Barnard DFO							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:38		2	4	0			good	2	2	0			2	6
2	10:41		4	1	0			good	4	0	0			4	5
3A	10:46		55	14	0			good	65	14	0			65	79
3B	10:53		53	32	0			good	52	34	0			53	86
4	11:03		47	22	1			good	51	8	0			51	69
5	11:12		35	33	1	35		good	50	40	3	30		50	90
6	11:18		46	9	0			good	10	40	2			46	55
7	11:24		16	27	0			good	11	47	1			16	58
8	11:40		0	13	0			good	14	0	0			14	14
9	11:52		17	3	0			good	16	5	0			17	21
10	11:59		50	48	3			good	50	49	2			50	99
11	12:10		26	27	2			good	56	11	2			56	67
12	13:15		71	18	3			good	79	11	3			79	90
13	13:36		26	9	0			good	8	23	0			26	35
14	13:50		55	12	4	250		fair	42	14	2	150	sturgeon	55	67
15	14:03		64	7	5	600		fair	53	13	4	350		64	71
16	15:34		55	6	4	600		fair	53	0	7	700		55	61
Total			622	285	23				616	311	26			703	973
Weather am:								sunny, clear, ground fog							
Weather pm:								sunny + clear							
Comments:															

Flight #: 4
 Date: 15-Sep-95
 Pilot:

Observers Representing		Front: Colin Barnard DFO						Back: Harry Goldberg ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	9:49	good	54	0	1			good	34	0	1			54	54
2	9:55	good	40	0	0			good	34	0	0			40	40
3A	10:04	good	65	12	2			good	29	55	2	1		65	84
3B	10:12	good	90	19	6			good	40	66	5	1		90	109
4	10:22	good	51	11	6			good	20	26	4			51	62
5	10:34	good	27	5	1			good	24	9	1	70		27	33
6	10:42	good	45	58	9	75		good	35	56	8			45	103
7	10:59	good	1	0	3			good	1	0	3			1	1
8	11:07	good	7	0	2			good	6	0	1			7	7
9	11:24	good	9	9	6			good	11	6	6			11	18
10	11:34	good	115	26	21			good	116	18	16			116	141
11	11:42	good	56	47	16			good	61	35	15			61	103
12	13:27	good	22	56	10			good	48	29	10			48	78
13	13:36	good	13	0	7			good	14	0	7			14	14
14	13:51	good	80	14	9		sturgeon	good	64	11	11		sturgeon	80	94
15	14:25	good	94	20	19	3		good	81	8	22			94	114
16	14:56	good	30	50	17	150		good	28	56	14	135		30	84
Total			799	327	135				646	375	126			834	1139
Weather am:		clear + sunny/some cloud, light breeze						sunny							
Weather pm:		sunny, clear, light breeze						sunny							
Comments:								good vis							

Flight #: 5
 Date: 22-Sep-95
 Pilot:

Observers Representing		Front: Harry Goldberg ALCAN						Back: Colin Barnard DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:12	good	37	0	0			excellent	35	0	0			37	37
2	10:18	good	41	0	1			excellent	45	0	1			45	45
3A	10:25	good	44	0	6			excellent	40	0	6			44	44
3B	10:51	good	93	0	8			excellent	96	0	9			96	96
4	11:01	good	33	2	5			excellent	36	0	6			36	36
5	11:13	good	13	0	4	60		excellent	13	0	6	80		13	13
6	11:20	good	64	3	18			excellent	68	0	17			68	68
7	11:35	good	4	1	6			excellent	6	0	7			6	6
8	11:42	good	4	0	2			excellent	5	0	3			5	5
9	11:56	good	6	1	7			excellent	8	0	7			8	8
10	12:05	good	39	4	7			excellent	28	0	7			39	43
11	12:21	good	33	2	9			excellent	36	0	11			36	36
12	13:30	good	39	0	8			excellent	45	0	9			45	45
13	13:37	good	4	2	4			excellent	6	0	4			6	6
14	13:52	fair	57	3	16	30		fair	60	0	20	40		60	60
15	14:17	fair	78	10	32	15		fair	96	0	34	~80		96	96
16	14:54	fair	49	5	11	370		fair	61	0	18	~250		61	61
Total			638	33	144				684	0	165			701	705
Weather am:	sunny						sunny, clear, very light breeze								
Weather pm:	sunny						sunny, clear, light breeze								
Comments:															

Flight #: 6
 Date: 29-Sep-95
 Pilot:

Observers Representing		Front: Colin Barnard DFO						Back: Harry Goldberg ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:09		32	0	1			good	29	0	0			32	32
2	10:12		32	0	3			good	30	0	3			32	32
3A	10:22		28	0	13			good	26	1	9			28	28
3B	10:28		23	0	14			good	23	0	13			23	23
4	10:37		7	0	22			good	7	0	21			7	7
5	10:46		6	0	8	7		good	7	1	4	7		7	8
6	10:52		7	0	18			good	9	0	14			9	9
7	11:04		2	0	5			good	3	0	4			3	3
8	11:11		3	0	8			fair	3	0	7			3	3
9	11:23		2	0	3			fair	2	0	2			2	2
10	11:29		2	0	13			fair	1	0	16			2	2
11	11:41		1	0	9			fair	2	0	8			2	2
12	12:58		2	0	4			fair	3	0	13			3	3
13	13:09		1	0	15			fair	1	0	3			1	1
14	13:23		3	0	27			fair-poor	2	0	17			3	3
15	13:46		11	0	22			fair-poor	9	1	25			11	11
16	14:17		7	0	18	15		fair-poor	7	0	18	15		7	7
Total			169	0	203				164	3	177			175	176
Weather am:	sunny, clouds, no wind														
Weather pm:	sunny, cloud, rain, wind														
Comments:							visibility poor due to wind								

Flight #: 7
 Date: 6-Oct-95
 Pilot:

Observers Representing		Front: Arne Lorenz						Back: Colin Barnard							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:36	fair	4	0	0			fair	6	0	0			6	6
2	10:39	fair	2	0	8			fair	2	0	9			2	2
3A	10:47	fair	8	0	16			fair	8	0	19			8	8
3B	10:53	fair	0	0	12			fair	1	0	11			1	1
4	11:01	fair	0	0	9			fair	0	0	12			0	0
5	11:09	fair	3	0	2			fair	1	0	3			3	3
6	11:14	fair	0	0	9			fair	0	0	13			0	0
7	11:22	fair	0	0	2			fair	0	0	1			0	0
8	11:28	fair	0	0	2			fair	0	0	2			0	0
9	11:38	fair	0	0	1			fair	0	0	3			0	0
10	11:44	fair	0	0	5			fair	0	0	4			0	0
11	11:55	fair	2	0	1			fair	0	0	3			2	2
12	13:12	fair	0	0	4			fair	0	0	3			0	0
13	13:17	fair	0	0	4			fair	0	0	2			0	0
14	13:31	poor	0	0	9			poor	0	0	8			0	0
15	13:51	poor	2	0	7			poor	2	0	6			2	2
16	14:20	poor	0	0	14			poor	0	0	11			0	0
Total			21	0	105				20	0	110			24	24
Weather am:	overcast/mist						overcast, rain, fog								
Weather pm:	overcast						overcast, cloud, rain								
Comments:															

Flight #: 1
 Date: 21-Aug-96
 Pilot: Don Buchanan

Observers Representing		Front: Jason Hwang DFO						Back: Harry Goldberg ALCAN							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:25	good	0	0	0			good	0	0	0			0	0
2	11:30	good	0	0	0			good	0	0	0			0	0
3A	11:35	good	0	3	0			good	0	4	0			0	4
3B	11:40	good	0	1	0			good	0	0	0			0	1
4	11:50	good	0	2	0			good	0	4	0			0	4
5	12:00	fair	0	0	0			fair	0	0	0			0	0
6	12:05	fair	0	4	0			fair	0	3	0			0	4
7	12:16	fair	0	0	0			fair	0	0	0			0	0
8	12:25	poor	0	0	0			fair	0	0	0			0	0
9	12:35	poor	0	0	0			fair	0	0	0			0	0
10	12:40	poor	0	0	0			fair	0	0	0			0	0
11	12:50	poor	0	0	0			fair	0	0	0			0	0
12	13:00	poor	0	0	0			fair	0	0	0			0	0
13	13:05	poor	0	0	0			fair	0	0	0			0	0
14	12:35	poor	0	0	0			fair-poor	0	0	0			0	0
15	13:52	poor	0	0	0			fair-poor	0	0	0			0	0
16	14:07	poor	0	0	0			fair-poor	0	0	0			0	0
Total			0	10	0				0	11	0			0	13
Weather am:	overcast, occasional sunny break														
Weather pm:	overcast, occasional sunny break														
Comments:	lots of water, vis OK in upper section, vis obscured by wind rippled water throughout, d/s Nautley deep & vis quite poor						windy day/overcast, ripples on surface, higher water than in previous years								

Flight #: 2
 Date: 28-Aug-96
 Pilot: Don Buchanan

Observers Representing		Front: Harry Goldberg ALCAN						Back: Jason Hwang DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:20	good	0	0	0			good	0	0	0			0	0
2	11:25	good	0	0	0			good	0	1	0			0	1
3A	11:30	good	5	9	0	25		good	4	9	0	25		5	14
3B	11:40	good	14	28	0			good	15	32	0			15	47
4	11:50	good	9	30	0			good	12	35	0			12	47
5	12:00	good	0	12	0			good	0	13	0			0	13
6	12:05	good	4	12	0			good	4	11	0			4	16
7	12:15	good	0	4	0			good	0	3	0			0	4
8	12:20	fair-poor	0	3	0			fair	0	3	0			0	3
9	12:35	fair-poor	0	7	0			fair	0	6	0			0	7
10	12:40	fair-poor	3	2	0			fair	3	3	0			3	6
11	12:50	fair-poor	3	3	0			fair	2	3	0			3	6
12	13:45	fair-poor	5	6	0			fair	12	8	0			12	20
13	13:50	fair-poor	0	11	0	*175		fair	0	11	0	50		0	11
14	14:10	poor	3	3	1			poor	2	4	1			3	6
15	14:35	poor	1	4	0			poor	2	2	0			2	5
16	15:05	poor	3	3	2	235		poor	2	4	2	190		3	6
Total			50	137	3				58	148	3			62	212
Weather am:							overcast, occasional sun								
Weather pm:							overcast, rain								
Comments:	* Nautley fog in morning - late start, after 1330 rain (drizzle, overcast) visibility generally poor						late departure due to fog in PG, poor visibility from about Diamond Island downstream, rain in the afternoon								

Flight #: 3
 Date: 4-Sep-96
 Pilot:

Observers Representing		Front: Jason Hwang DFO						Back: Harry Goldberg ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:20	good-fair	0	53	0			good-fair	0	59	0			0	59
2	10:28	good-fair	8	3	0			good-fair	10	1	0			10	11
3A	10:35	good-fair	57	0	0			good-fair	48	0	0			57	57
3B	10:42	good-fair	62	10	1			good-fair	70	3	1			70	73
4	10:13	good-fair	14	4	0			good-fair	9	3	1			14	18
5	11:22	good-fair	16	20	0			good-fair	12	15	0			16	36
6	11:31	good-fair	39	18	0			good-fair	35	13	0			39	57
7	11:44	good-fair	4	0	0			good-fair	2	1	0			4	4
8	11:51	good-fair	7	2	0			fair	5	5	0			7	10
9	12:04	good-fair	8	1	0			fair	7	3	1			8	10
10	12:11	good-fair	14	3	1			fair	10	9	1			14	19
11	12:25	good-fair	41	6	0			fair	38	2	0			41	47
12	13:21	good-fair	87	10	0			fair	86	13	0			87	99
13	13:33	good-fair	20	3	0			fair	13	5	1			20	23
14	13:55	poor-fair	8	4	1	70		poor	6	3	3			8	12
15	14:28	poor-fair	5	0	1	15		poor	9	0	0			9	9
16	14:58	poor-fair	20	1	3	160		poor	26	0	6			26	26
Total			410	138	7				386	135	14			430	570
Weather am:		sunny - partly cloudy						overcast in afternoon							
Weather pm:		cloud - occasional sun						wind ripple main visibility problem; water levels good for visibility. Last section very poor visibility due to overcast skies							
Comments:		better vis than last week, occasional ripple obscured vis. Vis poor generally d/s of Nautley, weather was overcast and some wind caused rippled water resulting in poor visibility, also this section is a little deeper and it was difficult to see well in some areas.													

Flight #: 4
 Date: 11-Sep-96
 Pilot: Don Buchanan

Observers Representing		Front: Harry Goldberg ALCAN						Back: Jason Hwang DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:28	good	35	11	0			good +	22	17	0			35	46
2	10:35	good	26	2	0			good +	20	6	0			26	28
3A	10:40	good	170	15	1			good +	168	0	1			170	185
3B	10:55	good	175	14	3			good +	170	19	3			175	189
4	11:04	good	46	19	2			good +	41	28	2			46	69
5	11:14	good	64	9	0			good +	35	32	1			64	73
6	11:21	good	158	13	0			good +	167	18	0			167	185
7	11:34	good	1	2	0			good +	1	3	0			1	4
8	11:40		25	1	0			good +	21	0	0			25	26
9	11:54		17	2	0			good +	20	3	0			20	23
10	12:01		92	4	0			good +	73	7	0			92	96
11	12:13		89	1	2			good +	91	6	2			91	97
12	12:16		104	10	1			good +	98	12	2			104	114
13	13:41		9	2	0			good +	6	2	0			9	11
14	13:58		86	4	1			good-fair	90	6	1			90	96
15	14:24		125	1	4			good-fair	120	0	5			125	126
16	14:53		102	3	5			good-fair	75	5	4	lots		102	105
Total			1324	113	19				1218	164	21			1342	1473
Weather am:	sunny - good visibility						sunny								
Weather pm:	sunny - good visibility						sunny - occasional cloud								
Comments:	replicate counts were done for sections 3A and 12 (s.3A 162, 0, 0 s.12 105, 3, 0)						much better vis d/s of Nautley to Vanderhoof, lots of sockeye from Nautley to Vanderhoof replicate counts were done for sections 3A and 12 (s.3A 179, 1, 0 s.12 13:30 111, 10, 0)								

Flight #: 5
 Date: 18-Sep-96
 Pilot: Craig Joyner

Observers Representing		Front: Jason Hwang DFO						Back: Harry Goldberg ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:08	fair-poor	34	0	0			poor-fair	36	0	0			36	36
2	11:13	fair-poor	47	1	1			poor-fair	49	1	1			49	50
3A	11:24	fair-poor	143	0	2			poor-fair	139	0	1			143	143
3B	11:34	fair-poor	146	0	5			poor-fair	133	0	4			146	146
4	11:49	fair-poor	39	2	9			poor-fair	38	4	9			39	42
5	12:05	fair-poor	78	1	5			poor-fair	70	0	5			78	79
6	12:15	fair-poor	89	2	13			poor-fair	89	3	14	2		89	92
7	12:32	fair-poor	1	0	2			poor-fair	1	0	2			1	1
8	12:39	fair-good	11	2	0			poor-fair	12	2	0			12	14
9	12:53	fair-good	18	0	8			poor-fair	20	0	8			20	20
10	13:03	fair-good	70	0	3			poor-fair	76	0	2			76	76
11	13:20	fair-good	65	0	8			poor-fair	64	0	11			65	65
12	14:25	fair-good	54	0	9			poor-fair	59	0	12			59	59
13	14:35	fair-good	6	6	5			poor-fair	4	5	6			6	12
14	14:55	fair-poor	72	2	10			fair	69	6	7			72	75
15	15:27	fair-poor	82	0	9	50		fair	92	1	7	50		92	93
16	16:02	fair-poor	40	0	11			fair	38	0	8			40	40
Total			995	16	100				989	22	97			1023	1043
Weather am:		low cloud, fog, rain						overcast, drizzle, no sunglasses							
Weather pm:		many sunny breaks						overcast - some sun							
Comments:		poor vis in upper section, observations tended to be biased to fish on redds as they were easier to see because gravel was clean, redds were also keyed in on by observers													

Flight #: 6
 Date: 25-Sep-96
 Pilot: Don Buchanan

Observers Representing		Front: Harry Goldberg ALCAN						Back: Jason Hwang DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	12:00	poor-fair	20	0	0			fair	21	0	0			21	21
2	12:05	poor-fair	14	0	0			fair	12	0	0			14	14
3A	12:12	poor-fair	50	0	1	10		fair	47	0	1	5		50	50
3B	12:18	poor-fair	46	0	19			fair	54	0	18			54	54
4	12:30	poor-fair	12	0	34	3		fair	9	0	38	3		12	12
5	12:38	poor-fair	25	0	4			fair	24	0	8			25	25
6	12:45	poor-fair	14	0	18			fair	12	0	16			14	14
7	12:50	poor-fair	0	0	5			fair	0	0	4			0	0
8	13:03	poor	7	0	3			fair-poor	6	0	2			7	7
9	13:13	poor	5	1	8			fair-poor	5	1	7			5	6
10	13:10	poor	18	0	5			fair-poor	16	0	7			18	18
11	13:34	poor	14	0	24			fair-poor	12	0	15			14	14
12	14:13	poor	9	1	8			fair-poor	10	1	5			10	11
13	14:49	poor	1	1	12			fair-poor	1	1	12			1	2
14	15:04	poor	13	0	6				10	0	6			13	13
15	15:24	poor	9	0	7				6	0	8			9	9
16	15:46	poor	8	0	12				8	0	11			8	8
Total			265	3	166				253	3	158			275	278
Weather am:	overcast						overcast								
Weather pm:	overcast						overcast								
Comments:	not enough time for repeating in 3 - flows up - looking for redds at risk - waited for better vis at lodge until noon replicate count was done for section 12 (3, 0, 0)						waited until noon to start hoping for weather to clear replicate count was done for section 12 (4, 0, 0)								

Flight #: 7
 Date: 2-Oct-96
 Pilot: Craig Joyner

Observers Representing		Front: Jason Hwang DFO						Back: Harry Goldberg ALCAN							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:52	fair	4	0	0			poor	5	0	0			5	5
2	10:56	fair	8	0	0			poor	6	0	0			8	8
3A	11:05	fair	12	0	8			poor	18	0	8			18	18
3B	11:13	fair	3	0	8			poor	4	0	5			4	4
4	11:29	fair	1	0	25			poor	2	0	18			2	2
5	11:42	fair-poor	2	0	0			poor	2	0	2			2	2
6	11:51	fair-poor	3	0	3			poor	3	0	4			3	3
7	12:04	fair-poor	0	0	0			poor	0	0	1			0	0
8	12:10	poor-fair	1	0	0			poor	1	0	0			1	1
9	12:23	poor-fair	0	0	0			poor	0	0	0			0	0
10	12:29	poor-fair	2	0	1			poor	2	0	1			2	2
11	12:44	poor-fair	0	0	1			poor	0	0	1			0	0
12	13:47	poor-fair	0	0	1			poor	0	0	1			0	0
13	13:56	poor-fair	0	0	0			poor	0	0	0			0	0
14	14:13	poor	0	0	0			very poor	0	0	0			0	0
15	14:35	poor	0	0	0			very poor	0	0	1			0	0
16	14:57	poor	0	0	1			very poor	0	0	1	1		0	0
Total			36	0	48				43	0	43			45	45
Weather am:	overcast						foggy-overcast								
Weather pm:	overcast, rain														
Comments:	vis impaired by weather and high water due to increased flows from reservoir						water levels high & overcast make for poor visibility, some rain in 12 & 13, visibility in 14-16 i.e. d/s Nautley very poor								

Flight #: 8
 Date: 9-Oct-96
 Pilot: Don Buchanan

Observers Representing		Front: Harry Goldberg ALCAN						Back: Jason Hwang DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:00	poor	0	0	0			fair-poor	0	0	0			0	0
2	10:05	poor	0	0	1			fair-poor	0	0	1			0	0
3A	10:13	poor	0	0	1			fair-poor	0	0	1			0	0
3B	10:18	poor	0	0	2			fair-poor	0	0	3			0	0
4	10:26	poor	0	0	18			fair-poor	0	0	6			0	0
5	10:33	poor	0	0	0			fair-poor	0	0	0			0	0
6	10:38	poor	0	0	1			fair-poor	0	0	2			0	0
7	11:07	poor	0	0	0			fair-poor	0	0	0			0	0
8	11:12	poor	0	0	0			poor-fair	0	0	0			0	0
9	11:18	poor	0	0	0			poor-fair	0	0	0			0	0
10	11:22	poor	0	0	0			poor-fair	0	0	0			0	0
11	11:32	poor	0	0	0			poor-fair	0	0	0			0	0
12	13:06	poor	0	0	0			poor-fair	0	0	0			0	0
13	13:12	poor	0	0	0			poor-fair	0	0	0			0	0
14	13:20	poor	0	0	1			poor	0	0	0			0	0
15	13:28	poor	0	0	0			poor	0	0	0			0	0
16	13:41	poor	0	0	0			poor	0	0	0			0	0
Total			0	0	24				0	0	13			0	0
Weather am:	overcast/some drizzle						overcast, rain								
Weather pm:	overcast/drizzle some rain						overcast								
Comments:	high water levels make visibility very difficult						poor visibility throughout, high water levels made for generally poor visibility especially d/s of Nautley River								

Flight #: 1
 Date: 27-Aug-97
 Pilot: Craig Joyner

Observers Representing		Front: Dan Bouillon ALCAN						Back: Colin Barnard DFO							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:00	sun	0	1	0			poor (~2m	0	0	0			0	1
2	10:03	sun	0	0	0			poor (~2m	0	0	0			0	0
3A	10:06	sun	0	25	0			poor (~2m	0	29	0			0	29
3B	10:21	sun	0	65	0			poor (~2m	0	59	0			0	65
4	10:44	cloud	0	43	0			poor (~2m	0	46	0			0	46
5	11:07	cloud	0	3	1			poor (~1m	0	2	1			0	3
6	11:17	cloud	0	9	3	25		poor (~1m	0	7	3	25		0	9
7	11:37	cloud	0	15	0			poor (~1m	0	14	0			0	15
8	11:48	cloud	0	3	0			poor (wind	0	3	0			0	3
9	12:05	cloud	0	1	0			poor (wind	0	0	0			0	1
10	12:55	cloud	0	4	1			poor (wind	0	1	1			0	4
11	13:17	cloud	0	4	0			poor (wind	0	5	0			0	5
12	13:30	cloud	0	0	0			poor (wind	0	0	0			0	0
13	13:40	cloud	0	0	0			poor (wind	0	0	0			0	0
14	13:57	cloud	0	0	0			very poor	0	0	0			0	0
15	14:22	cloud	0	0	1			very poor	0	0	1			0	0
16	15:16	cloud	0	2	1			very poor	0	2	1			0	2
Total			0	175	7				0	168	7			0	183
Weather am:		100% cloud cover early morning; light winds; sunny periods						partly overcast, light winds							
Weather pm:		cloudy with sunny periods						increasing cloud, rain, wind							
Comments:		Heavy rain last night - first in over a month - anticipate turbidity, but didn't happen. High water, clouds & some wind ripple a problem. Water visibility poor, many areas could not see through water at all. Lots of suckers observed, but not recorded.						poor vis throughout survey; water still high + slightly turbid							

Flight #: 2
 Date: 3-Sep-97
 Pilot: Don Buchanan

Observers Representing		Front: Colin Barnard DFO						Back: Dan bouillon ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:30	sun	1	0	0			sun	1	0	0			1	1
2	10:33	sun	10	0	0			sun	11	0	0			11	11
3A	10:41	sun	10	89	1			sun	24	99	1			24	123
3B	10:51	sun	93	100	1			sun	139	35	1			139	193
4	11:07	sun	25	80	1			sun	30	74	1			30	105
5	11:17	sun	45	25	0			sun	37	32	0			45	70
6	11:30	sun	48	60	3			sun	55	47	3			55	108
7	11:45	sun	0	9	0			sun	0	10	0			0	10
8	11:54	sun	6	3	0			sun	0	14	0			6	14
9	12:08	sun	9	0	1			sun	2	7	0			9	9
10	12:17	sun	28	19	0			sun	32	18	0			32	50
11	12:30	sun	110	40	2			sun	132	28	2			132	160
12	13:23	sun	42	20	2			sun	41	19	2			42	62
13	13:32	sun	7	0	3	20		sun	4	4	3	20		7	8
14	13:53	sun	4	0	1			sun	4	0	1			4	4
15	14:13	sun	14	0	1			sun	14	3	0			14	17
16	14:36	turbid (~1r	24	0	2			sun	12	9	2	5		24	24
Total			476	445	18				538	399	16			575	969
Weather am:	sunny, calm, clear						no clouds, clear, no wind, sunny								
Weather pm:	clear, sunny, light breeze						sunny, very light breeze								
Comments:							excellent conditions today, water flow above Nautley at about 3000 cfs								

Flight #: 3
 Date: 10-Sep-97
 Pilot: Don Buchanan

Observers Representing		Front: Dan Bouillon ALCAN						Back: Colin Barnard DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	9:45	Cloud	4	0	0			Cloud	5	0	0			5	5
2	9:49	Cloud	70	8	0			Cloud	77	7	0			77	84
3A	9:59	Cloud	102	0	1			Cloud	97	0	7			102	102
3B	10:07	Cloud	244	0	7			Cloud	272	0	7			272	272
4	10:36	Cloud	48	16	13			Cloud	67	7	13			67	74
5	10:45	Cloud	98	0	1			Cloud	101	0	1			101	101
6	10:54	Cloud	84	6	7	7		Cloud	94	0	7	9		94	94
7	11:07	Cloud	0	0	1			Cloud	0	0	1			0	0
8	11:13	Cloud	10	6	1			Cloud	11	5	1			11	16
9	11:25	Cloud	11	0	1			Cloud	15	0	1			15	15
10	11:32	Cloud	47	0	2			Cloud	45	0	2			47	47
11	11:44	Cloud	192	2	4			Cloud	195	8	4			195	203
12	12:54	Cloud	115	0	8			Cloud	87	6	8			115	115
13	13:05	Cloud	2	0	5			Cloud	0	0	5			2	2
14	13:24	Cloud	11	0	1			Cloud	13	0	1			13	13
15	13:44	Cloud	43	0	0	2		Cloud	44	0	3			44	44
16	14:06	Cloud	52	0	9	7		Cloud	60	0	9	7		60	60
Total			1133	38	61				1183	33	70			1220	1247
Weather am:	100% cloud						high broken; some fog								
Weather pm:	100% cloud						overcast moving in; wind picking up								
Comments:	very little wind, cloudy all day, occasional sunny periods														

Flight #: 4
 Date: 18-Sep-97
 Pilot: Craig Joyner

Observers Representing		Front: Colin Barnard DFO						Back: Dan Bouillon ALCAN							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:07	Sun	12	0	1			Sun	11	0	1			12	12
2	10:10	Sun	48	0	2			Sun	40	0	2			48	48
3A	10:22	Sun	136	0	2			Sun	139	2	2			139	141
3B	10:32	Sun	186	4	9			Sun	195	0	5			195	195
4	11:05	Sun	44	0	14	60		Sun	45	0	15	80		45	45
5	11:20	Sun	72	0	8	5		Sun	73	0	8	4		73	73
6	11:29	Sun	44	0	17	10		Sun	39	0	17	8		44	44
7	11:46	Sun	0	0	10			Sun	0	0	9	2		0	0
8	11:57	Sun	14	0	8			Sun	23	1	8			23	24
9	12:14	Sun	13	0	5			Sun	15	2	4			15	17
10	12:22	Sun	70	0	6			Sun	71	0	7			71	71
11	12:38	Sun	111	0	20			Sun	122	0	20			122	122
12	13:35	Sun	82	0	10			Sun	82	0	14			82	82
13	13:43	Sun	2	0	5			Sun	5	0	5			5	5
14	13:56	Sun	24	0	11			Sun	28	0	13			28	28
15	14:21	Sun	69	0	13	16		Sun	70	0	19			70	70
16	14:55	Sun	71	0	18	78		Sun	77	0	19	80		77	77
Total			998	4	159				1035	5	168			1049	1054
Weather am:	sunny, clear						clear, sunny, some fog, ~2 C at 0900								
Weather pm:	sunny + some clouds						clear, sunny								
Comments:	down at Bond Bros (mechanical problems), off @ 1644						excellent conditions, low wind, sunny all day S. 16 - helicopter hydraulic problem: 1 hr for new chopper								

Flight #: 5
 Date: 23-Sep-97
 Pilot: Craig Joyner

Observers Representing		Front: Dan Bouillon ALCAN						Back: Colin Barnard DFO							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:06	Sun	4	0	1			Sun	4	0	1			4	4
2	10:11	Sun	31	0	1			Sun	42	0	1			42	42
3A	10:20	Sun	62	0	6			Sun	67	0	8			67	67
3B	10:28	Sun	100	0	17			Sun	88	0	18			100	100
4	10:44	Sun	23	0	27	90		Sun	33	0	27	35		33	33
5	10:57	Sun	13	0	13			Sun	12	0	13			13	13
6	11:04	Sun	26	0	28	18		Sun	24	0	31	27		26	26
7	11:19	Sun	4	0	5			Sun	4	0	6			4	4
8	11:28	Sun	8	0	5			Sun	7	0	5			8	8
9	11:42	Sun	6	0	6			Sun	6	0	6			6	6
10	11:50	Sun	25	0	6			Sun	24	0	7			25	25
11	12:05	Sun	29	0	26			Sun	26	0	36			29	29
12	12:49	Sun	17	0	17			Sun	14	0	21	11		17	17
13	12:59	Sun	1	0	8			Sun	1	0	10			1	1
14	13:14	Sun	15	0	12			Sun	14	0	15			15	15
15	13:41	Sun	35	0	17	24		Sun	35	0	20	27		35	35
16	14:14	Sun	40	0	16	35		Sun	35	0	22	25		40	40
Total			439	0	211				436	0	247			465	465
Weather am:		sunny, light wind, 14 C at 1000 hrs						clear, calm, sunny							
Weather pm:		sunny, light wind						hot + sunny + calm							
Comments:		excellent flying conditions general rule of thumb: 15 mph (big schools), 20-22 mph (nice cruising), 30 mph (sandy areas, no fish)													

Flight #: 6
 Date: 1-Oct-97
 Pilot: Craig Joyner

Observers Representing		Front: Colin Barnard DFO						Back: Dan Bouillon ALCAN							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:15	Cloud	4	0	3			Cloud	3	0	2			4	4
2	10:19	Cloud	10	0	2			Cloud	8	0	2			10	10
3A	10:28	Cloud	11	0	12			Cloud	12	0	8			12	12
3B	10:35	Cloud	3	0	26			Cloud	3	0	21			3	3
4	10:49	Cloud	0	0	20			Cloud	0	0	18			0	0
5	10:59	Cloud	0	0	12			Cloud	0	0	11			0	0
6	11:05	Cloud	0	0	13	36		Cloud	1	0	10	35		1	1
7	11:18	Cloud	0	0	2			Cloud	0	0	1			0	0
8	11:25	Cloud	0	0	0			Cloud	0	0	0			0	0
9	11:38	Cloud	0	0	0			Cloud	0	0	0			0	0
10	11:45	Cloud	0	0	4			Cloud	0	0	2			0	0
11	11:59	Cloud	1	0	6			Cloud	1	0	6			1	1
12	12:41	Cloud	1	0	5			Cloud	0	0	3			1	1
13	12:48	Cloud	0	0	6			Cloud	0	0	6		~100	0	0
14	13:03	Cloud	0	0	3			Cloud	0	0	3			0	0
15	13:27	Cloud	0	0	2			Cloud	0	0	2			0	0
16	13:48	Cloud	0	0	26			Cloud	0	0	24			0	0
Total			30	0	142				28	0	119			32	32
Weather am:	high overcast, low cloud, light wind						low cloud, 100% cover								
Weather pm:	rain, low cloud, bad vis						low cloud, rain								
Comments:	generally ppoor visibility, low overcast, rain, low cloud						poor conditions for counting: low cloud, wind ripple (day started out clear but clouded up by count time) Low confidence in accuracy of the count today due to poor vis								

Flight #: 1
 Date: 14-Aug-98
 Pilot:

Observers Representing		Front: Jason Hwang DFO						Back: Dan Bouillon ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	12:49	poor (high)	0	0	0			sun	0	0	0			0	0
2	12:54	poor (high)	0	0	0			sun	0	0	0			0	0
3A	13:02	poor (high)	0	0	0			sun	0	0	0			0	0
3B	13:09		0	0	0			sun	0	0	0		*	0	0
4	13:28		0	0	0			sun	0	0	0			0	0
5	13:45		0	0	0			sun	0	0	0			0	0
6	13:56		0	0	0		*1 fish	sun	0	0	0		*** 1 fish	0	0
7	14:15		0	0	0			sun	0	0	0			0	0
8	14:22		0	0	0			sun	0	0	0			0	0
9	14:34		0	0	0			sun	0	0	0			0	0
10	14:42		0	0	0			sun	0	0	0			0	0
11	14:56		0	0	0			sun	0	0	0			0	0
12	15:34		0	0	0			sun	0	0	0			0	0
13	15:40		0	0	0			sun	0	0	0			0	0
14	15:55		0	0	0			cloud	0	0	0	**		0	0
15	16:09	no vis (ver)	0	0	0			cloud	0	0	0			0	0
16	16:24	poor (rain)	0	0	0			cloud/rain	0	0	0			0	0
Total			0	0	0				0	0	0			0	0
Weather am:	sunny, a few high clouds														
Weather pm:	some clouds, their shade obscures the view														
Comments:	* 1 large whitefish swimming on surface														
	we decided to start counts today because we had reports that fish were returning about 1 week early to other upper Fraser tribs. The water levels were still high due to the STMP-visibility was impaired														
							* Section 3B - large fish with "chinook-like" behavior: possibly a migrating/holding chinook but could not make positive ID								
							** about 50 sockeye holding just below bridge on Nautley River								
							*** swimming weakly on surface, pale in colour								

Flight #: 2
 Date: 19-Aug-98
 Pilot:

Observers Representing		Front: Dan Bouillon ALCAN						Back: Jason Hwang DFO							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:48	sun	0	0	0			poor-fair (c	0	0	0			0	0
2	11:53	sun	0	0	0			poor-fair (c	0	0	0			0	0
3A	12:01	sun	0	0	0			poor-fair (c	0	0	0			0	0
3B	12:11	sun	0	0	0			good (d/s	0	0	0			0	0
4	12:22	sun	0	0	0			OK (on du	0	0	0			0	0
5	12:29	sun	0	0	0				0	0	0			0	0
6	12:36	sun	0	2	0			OK/poor (c	0	2	0			0	2
7	12:54	sun	0	0	0				0	0	0			0	0
8	13:03	sun	0	0	0			poor (som	0	0	0			0	0
9	13:20	sun	0	0	0			poor (som	0	0	0			0	0
10	13:28	sun	0	1	0				0	1	0			0	1
11	13:45	sun	0	2	0				0	4	0			0	4
12	14:56	sun	0	4	0			fair/good (c	0	4	0			0	4
13	15:10	sun	0	1	0			poor (sun	0	0	0			0	1
14	15:33	sun	0	0	0			poor (vis p	0	0	0			0	0
15	15:57	sun	0	0	0				0	0	0			0	0
16	16:23	sun	0	1	0	6			0	1	0	6		0	1
Total			0	11	0				0	12	0			0	13
Weather am/pm:	sunny all day with excellent flying/counting conditions														
Comments:	water level still too high to see to bottom in many areas						water still deep, esp. in d/s reaches vis generally fair/poor d/s of Nautley								

Flight #: 3
 Date: 26-Aug-98
 Pilot:

Observers Representing		Front: Jason hwang DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	13:22	good (clear)	0	0	0			good (part)	0	0	0			0	0
2	13:26	good-fair (clear)	0	0	0			good (clear)	0	0	0			0	0
3A	13:34		0	6	0				0	6	0			0	6
3B	13:42		0	18	0				0	19	0			0	19
4	13:52	fair (wind ripple)	0	12	0	15		poor (wind ripple)	0	12	0	20		0	12
5	14:02		0	30	0				0	22	1			0	30
6	14:11	fair-good (clear)	0	34	0	17		(wind ripple)	0	13	0	16		0	34
7	14:28	(ripple, part)	0	5	0				0	3	1			0	5
8	14:37	fair-poor (visibility)	0	3	0			(cloud + wind)	0	3	0			0	3
9	14:53		0	6	0	15		(wind + cloud)	0	2	0			0	6
10	15:02	fair-poor (visibility)	0	1	0	10		(more cloud)	0	5	0	20		0	5
11	15:17	poor (wind ripple)	0	44	0	6		poor	0	45	0	25		0	45
12	16:10	poor (wind ripple)	0	10	0			poor (cloud)	0	11	0			0	11
13	16:23	poor/fair (visibility)	0	1	0	*50		poor (dark)	0	12	0	36		0	12
14	16:47	(no wind ripple)	0	17	1	lots		very poor	0	0	1	~100		0	17
15	17:15		0	14	0	lots			0	8	0	35		0	14
16	17:44	poor/fair (visibility)	0	2	0	lots		very poor	0	5	1	200+		0	5
Total			0	203	1				0	166	4			0	224

Comments:

* lots of sockeye at Nautley
 Didn't start until late due to rescheduling, resulting in added glare in late PM on some sections. Conditions good at start, by end sky was overcast, light rain started, making visibility poor in deeper sections but we were still able to count fish in the shallows near V-hoof.
 Water levels dropped from last week, improving visibility.

Flight #: 4
 Date: 2-Sep-98
 Pilot:

Observers Representing		Front: Dan Bouillon ALCAN						Back: Jason Hwang DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:36	sun/wind	0	0	0			fair-good (	0	1	0			0	1
2	11:41	sun/wind	0	5	0				0	7	0			0	7
3A	11:47	sun/wind	0	33	0			(sunny, wi	0	31	0			0	33
3B	12:06	sun/wind	4	17	0			(tailwind m	3	20	0			4	23
4	12:15	sun/wind	4	10	0				3	9	0			4	14
5	12:24	sun/wind	6	27	0			(glare, win	4	21	0			6	33
6	12:40	sun/wind	5	12	0			poor/good	4	14	0			5	18
7	12:58	sun/wind	0	8	0	1 mort			0	6	0	4		0	8
8	13:13	sun/wind	0	8	0	10		poor/fair (o	0	6	0	4		0	8
9	13:30	sun/wind	0	13	0			(wind rippl	0	13	0			0	13
10	13:43	sun/wind	1	27	0	10		(very wind	1	26	0	10		1	28
11	13:58	sun/wind	8	42	0				10	44	0			10	54
12	15:39	sun/wind	2	24	0			good-fair (	2	17	0			2	26
13	15:52	sun/wind	0	59	0	*149			4	48	1	226		4	59
14	16:19	sun/wind	0	33	0	37		(windy - co	4	26	0	90		4	33
15	16:53	sun/wind	19	44	3	85		poor/good	13	34	3	74		19	63
16	17:35	sun/wind	37	19	0	230		fair/poor (v	28	19	1	180+		37	56
Total			86	381	3				76	342	5			96	477
Weather am:		sunny, occasional broken cloud, very windy													
Weather pm:		sunny, occasional broken cloud, very windy													
Comments:		* close to Nautley River Very windy all day. Sometimes difficult to maintain course and speed. Wind ripple made visibility poor (poor as, or poorer than a dark cloudy day						section 5 - there were lots (40?) of fish on shallows at Big Eddy that moved into deep as we flew over and we tried a 2nd pass but couldn't see them - I didn't record these fish as I didn't get a count on the 1st pass.							

Flight #: 5
 Date: 9-Sep-98
 Pilot:

Observers Representing		Front: Jason hwang DFO						Back: Dan Bouillon ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:46	fair-good (	0	6	0			sun/cloud	0	11	0			0	11
2	10:51	good (esp	7	1	0			cloud/sun	7	1	0			7	8
3A	10:58	good (fair	66	23	0	10		sun/cloud	65	52	0			66	117
3B	11:08	good (esp	99	12	2			sun/cloud	96	9	2		~2000	99	111
4	11:18	good (esp	27	19	1			sun/cloud	35	16	1		200	35	51
5	11:33	good	114	50	1			sun	112	50	1		500	114	164
6	11:49	good	53	25	0	7		sun/cloud	54	17	0	6	1000	54	78
7	12:08		16	4	0	10		sun	11	6	0	4	1000	16	20
8	12:18	good (som	20	0	0	22		sun	29	1	0	20	1000	29	30
9	12:34	good-fair (	37	5	0			sun	34	8	0	4		37	42
10	12:45	fair (cloud	48	17	0	20		sun/wind	67	17	0			67	84
11	13:02		143	19	0			sun/wind	149	12	0		1000+	149	162
12	14:22	poor-good	91	4	0	5		cloud/wind	96	4	0			96	100
13	14:35		20	2	5			cloud/wind	25	0	5	2		25	25
14	15:05		74	4	0	lots		cloud/wind	58	6	0	20		74	78
15	15:39	poor (clou	65	4	3	lots		cloud/wind	79	0	6	22		79	79
16	16:15		86	2	4			cloud/wind	98	1	5	450		98	99
Total			966	197	16				1015	211	20			1045	1259
Weather am:								calm day, high broken cloud (low wind)							
Weather pm:															
Comments:		vis good until lunch break @ Triton trailer (end of s 11), then became overcast, also windy - adding wind ripple to water surface. Vis generally poor from sec. 12 to end section 5 - 50 M/H in Big Eddy hole													

Flight #: 6
 Date: 15-Sep-98
 Pilot:

Observers Representing		Front: Dan bouillon ALCAN						Back: Jason Hwang DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:53	cloud	16	1	0			fair-good (c	8	5	0			16	17
2	11:00	cloud	42	0	0				39	0	0			42	42
3A	11:10	cloud	57	0	1			fair-poor (c	53	1	1			57	57
3B	11:31	cloud	158	0	9			fair-poor (c	146	1	12			158	158
4	11:48	cloud	50	0	4			fair-poor (c	32	4	4			50	50
5	12:03	cloud/wind	90	0	5	125	*lots	fair-poor (c	69	3	3	100		90	90
6	12:12	cloud/wind	55	0	4	35		fair-poor (c	42	8	2			55	55
7	12:59	cloud/wind	7	0	1				6	0	1			7	7
8	13:07	cloud/wind	22	0	0			poor (cloud	18	2	0			22	22
9	13:27	cloud/wind	24	0	3			poor (cloud	16	1	3			24	24
10	13:40	cloud	57	0	4			poor (cloud	61	2	2			61	63
11	13:57	cloud/wind	112	0	1			poor (cloud	95	4	1			112	112
12	15:14	cloud	85	0	9	4		fair (could	76	4	8	4		85	85
13	15:39	cloud	15	0	1			fair (could	14	2	2			15	16
14	15:58	cloud	74	0	1	100		fair (could	76	0	1			76	76
15	16:24	cloud/wind	75	0	1	100		fair-poor (c	47	0	0			75	75
16	16:49	cloud	90	0	4	925		poor-fair (s	99	0	4			99	99
Total			1029	1	48				897	37	44			1044	1048
Weather am/pm:	100% overcast and cloud during count wind ripple reduced visibility at times						Overcast, and there was wind all day causing ripple on the water. Visibility was generally poor-fair, with many places where it was difficult to see even around dunes & redds.								
Comments:	*lots of suckers d/s of redds/spawning replicate counts were done for sections 3A and 12 (s.3A 11:22, 54, 0, 1 s.12 15:28, 74, 0, 9)						replicate counts were done for sections 3A and 12 (s.3A 11:22, 39, 1, 1 s.12 15:28, 74, 3, ?)								

Flight #: 7
 Date: 21-Sep-98
 Pilot:

Observers Representing		Front: Jason Hwang DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	12:25	good (sun	19	0	0			excellent	8	0	0		300	19	19
2	12:31	excellent	40	0	0	5		excellent	54	0	0	5		54	54
3A	12:39	excellent	61	1	10			excellent	73	0	10	6		73	73
3B	12:46		91	0	21			excellent	94	0	26	4		94	94
4	12:57	excellent	20	8	15			excellent	29	6	17	8		29	35
5	13:07		50	5	17	150		excellent	59	6	21	200		59	65
6	13:18		29	2	15	75		excellent	30	3	21	80		30	33
7	13:33		2	3	4			excellent	5	2	5			5	7
8	13:41		11	1	1			excellent	13	2	1			13	15
9	13:54	excellent	34	0	10			excellent	39	2	10	4		39	41
10	14:03		41	0	9			good (som	42	0	12			42	42
11	14:17	excellent	66	1	14			excellent	61	4	18			66	67
12	15:19	excellent	29	2	19			excellent	27	4	29			29	31
13	15:32		7	0	5			(wind pick	6	2	9			7	8
14	15:44	good (a bi	103	0	22	lots			87	5	26	200		103	103
15	16:11	good (a fe	85	0	15	lots			107	10	19	300+		107	117
16	16:43	excellent (	66	0	18			(shadows)	69	3	23	100+		69	72
Total			754	23	195				803	49	247			838	876
Weather am:								clear, sunny, blue skies							
Weather pm:															
Comments:															

Flight #: 8
 Date: 25-Sep-98
 Pilot:

Observers Representing		Front: Colin Barnard ALCAN						Back: Jason Hwang DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	12:11		11	0	1				9	0	0			11	11
2	12:15		31	0	7				28	0	2			31	31
3A	12:22		43	0	17			good (clou	37	0	17			43	43
3B	12:29		28	3	37			good (sun	31	1	37			31	32
4	12:39		3	0	27			good (sun	5	0	19			5	5
5	12:50		15	2	23	125		good (sun	18	0	24	~100*		18	18
6	13:00		5	0	32	200+		good	6	0	18	75**		6	6
7	13:15		1	0	2			good	1	0	2			1	1
8	13:23		2	0	2			good (sun	3	0	2			3	3
9	13:36		18	0	10			good (occ	13	0	9			18	18
10	13:45		8	0	17			goos (som	13	0	12			13	13
11	14:00		15	0	19			excellent (	11	0	18			15	15
12	15:00		10	0	19			good (occ	5	0	13			10	10
13	15:13		0	0	15			good (clou	1	0	5			1	1
14	15:26		19	0	34			good-fair (	20	0	25			20	20
15	15:51		15	0	40	100+		good-fair (	18	0	24			18	18
16	16:14		13	0	30	75		good-exce	19	0	18			19	19
Total			237	5	332				238	1	245			263	264
Weather am:	high overcast, wind, broken cloud						cloud, sunny breaks								
Weather pm:															
Comments:							Counted on Friday because we flew 'extra' flight on Mon this week Tried to fly earlier than Mon, but fog on Sat & Sun prevented departure from PG S. 3B - new fish migrating u/s, seem to be new fish on redds								

Flight #: 9
 Date: 30-Sep-98
 Pilot:

Observers Representing Front: Jason Hwang
 DFO

Back: Dan Bouillon
 ALCAN

River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:35	fair-good	3	0	0			cloud	2	0	0			3	3
2	11:40	fair-good	9	0	8			cloud	6	0	5			9	9
3A	11:47	fair-good	16	0	14			cloud	15	0	16		suckers	16	16
3B	12:17	fair-good	4	0	22			cloud	2	0	30		suckers	4	4
4	12:28	fair-good	1	0	15			cloud	1	0	17		suckers	1	1
5	12:38	fair-good	1	0	8	50 to 60		cloud	1	0	7	*60	suckers	1	1
6	12:46	fair-good	2	0	7	~100		cloud	3	0	10	*75	suckers	3	3
7	13:08	fair-good	1	0	4			cloud	1	0	9		suckers	1	1
8	13:15	fair-good	1	0	2			cloud	1	0	1	1	suckers	1	1
9	15:27	fair-good	5	0	4			cloud	4	0	6		suckers	5	5
10	13:36	fair-good	0	0	13			cloud	1	0	10		suckers	1	1
11	13:49	fair-good	2	0	9			cloud	1	0	12		suckers	2	2
12	14:52	fair-good	1	0	14			cloud	1	0	11		suckers	1	1
13	14:59	fair-good	0	0	5			cloud	0	0	16		suckers	0	0
14	15:12	fair-good	1	0	11			cloud	0	0	6		suckers	1	1
15	15:34	fair-good	5	0	17	40+		cloud	5	0	22	55	suckers	5	5
16	15:58	fair-good	1	0	9	100+		cloud	1	0	7	30	suckers	1	1
Total			53	0	162				45	0	185			55	55

Weather am/pm:
 Comments:

S. 11 - one fish on redds near Triton trailer was digging

100% cloud, almost no wind, mild temperature
 Bright' for a cloudy day, but visibility would be considerably better with sunshine. Low flow helped increase visibility (flows are about as low as you would ever want to see the river) Carcass counts do not include carcass recovery sampled chinook.
 * spawning in Nechako River

Flight #: 1
 Date: 26-Aug-99
 Pilot:

Observers Representing		Front: Dan Bouillon ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:16	cloud	0	0	0			cloud	0	0	0			0	0
2	11:21	cloud	0	0	0			cloud	0	0	0			0	0
3A	11:31	cloud	3	0	0			cloud	0	0	0			3	3
3B	11:38	cloud	0	0	0			cloud	3	0	0			3	3
4	11:58	cloud	0	0	0		5 suckers	cloud	0	0	0		10's	0	0
5	12:08	cloud	2	0	0		10 suckers	cloud	0	0	0		6	2	2
6	12:18	cloud	2	0	0			cloud	2	1	0		24	2	3
7	12:38	cloud/wind	0	6	0		suckers	cloud/wind	0	6	0		8	0	6
8	12:49	cloud/wind	0	0	0			cloud/wind	0	0	0			0	0
9	13:06	cloud	0	0	0			cloud	0	0	0			0	0
10	13:16	cloud	0	4	0			cloud	0	2	0			0	4
11	13:25	cloud	0	3	0			cloud	0	3	0			0	3
12	14:54	cloud	0	3	0			cloud	0	4	0			0	4
13	15:07	cloud	0	2	0			cloud	0	2	0		8	0	2
14	15:24	cloud	0	0	0			cloud	0	0	0			0	0
15	15:45	cloud	0	0	0			cloud	0	0	0			0	0
16	16:11	cloud	0	0	0	25		cloud	0	1	0	5		0	1
Total			7	18	0				5	19	0			10	31
Weather am:	100% cloud cover, light to no wind						cloudy, light wind								
Weather pm:	100% cloud cover, light wind, "spitting" out rain						cloudy, light wind/"rain"								
Comments:	helicopter speed = 20 mph is a good speed for careful observation						poor vis.								

Flight #: 2
 Date: 1-Sep-99
 Pilot:

Observers Representing		Front: Byron Nutton DFO						Back: Colin Barnard ALCAN							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:33	cloud	0	0	0				0	0	0			0	0
2	10:36	cloud	0	2	0		10's		0	4	0			0	4
3A	10:44	cloud	2	4	0				3	3	0			3	6
3B	10:50	cloud	0	45	0	3			6	40	0	3		6	46
4	11:05	cloud	0	18	0				2	22	0			2	24
5	11:19	cloud	0	47	0	3	10's		9	41	10			9	50
6	11:31	cloud	16	32	3	4	100's		12	37	3	9		16	49
7	11:56	cloud	0	7	0		100's		0	8	0	3		0	8
8	12:07	cloud	0	3	0				0	3	0			0	3
9	12:20	cloud	0	1	0				0	1	0			0	1
10	12:30	cloud	0	7	0				0	10	0			0	10
11	12:45	cloud	7	16	0	1			8	17	0	2		8	25
12	14:06	cloud/wind	4	34	0		100's		20	24	0	5		20	44
13	14:26	cloud/wind	0	5	1				0	5	1			0	5
14	14:48	cloud/wind	3	4	0				3	4	0			3	7
15	15:12	cloud	5	2	2				5	3	2			5	8
16	15:37	cloud	11	8	4				11	5	3			11	19
Total			48	235	10				79	227	19			83	309
Weather am:	cloudy														
Weather pm:	cloudy with some wind in early afternoon														
Comments:	fairly poor visibility due to overcast - little light...poor viewing depth														

Flight #: 3
 Date: 7-Sep-99
 Pilot:

Observers Representing		Front: Dan Bouillon ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:48	sun	0	0	0			sun	0	0	0		10's	0	0
2	10:50	sun	9	0	0			sun	4	6	0		10's	9	10
3A	10:59	sun	69	21	0			sun	43	39	0		10's	69	90
3B	11:05	sun	81	22	2			sun	80	41	2		100's	81	121
4	11:15	sun	23	36	2			sun	32	26	1		100's	32	59
5	11:26	sun	102	35	2			sun	102	42	2		1000's	102	144
6	11:38	sun	58	9	8		1000's	sun	44	17	9		1000's	58	67
7	11:52	sun	5	2	4		100's	sun	3	5	3		100's	5	8
8	12:00	sun	6	4	1			sun	2	4	1		10's	6	10
9	12:13	sun	21	2	2			sun	14	4	2		10's	21	23
10	12:22	sun/wind	55	5	1		100's	sun	47	16	0		100's	55	63
11	12:36	sun	66	18	1			sun	92	14	0		1000's	92	106
12	13:30	sun	77	24	0		100's	sun	66	29	0		100's	77	101
13	13:41	sun	13	7	0			sun	15	14	0		100's	15	29
14	13:59	sun	92	7	0	140		sun	77	11	1	~150	100's	92	99
15	14:25	sun	37	3	5	225		sun	41	5	2	~200		41	46
16	14:52	sun	69	1	6	470		sun	69	0	6	~500		69	70
Total			783	196	34				731	273	29			824	1046
Weather am:	sunny with some broken cloud, some windy periods prior to count, light wind during count						sunny - some shadows in first few reaches								
Weather pm:	mainly sunny with increasing broken cloud, light wind						sunny with some cloud+wind increasing toward end of flight								
Comments:	generally ideal viewing & flying conditions						very good conditions for flying+viewing (except some tail wind in PM but pilot maintained good speed, position, etc therefore didn't affect count								

Flight #: 4
 Date: 15-Sep-99
 Pilot: Ken Knight, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Dan Bouillon ALCAN							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:03	sun	2	20	0			sun	2	31	0			2	33
2	11:08	sun	24	1	0			sun	23	0	0			24	25
3A	11:17	sun	139	27	3		1000's	sun	159	30	3		1000	159	189
3B	11:27	sun	168	7	11		1000's	sun	171	8	9			171	179
4	11:42	sun	54	6	4		1000's	sun	60	3	5			60	63
5	11:53	sun	127	5	9	100	1000's	sun	135	1	10	101	1000's	135	136
6	12:07	sun	72	12	13	50	1000's	sun	86	1	16	50	1000's	86	87
7	12:22	sun	4	2	3	12	100's	sun	4	2	4	12	1000's	4	6
8	12:33	sun	5	3	2		100's	sun	8	4	6			8	12
9	12:47	sun	9	3	2	20		cloud	9	1	2	20	100's	9	12
10	12:58	sun	48	4	1			sun	49	3	2		100's	49	52
11	13:16	sun	106	0	2			cloud	102	0	2			106	106
12	14:42	sun	84	7	12			sun	77	4	11			84	91
13	14:56	sun	2	2	1			sun	2	2	1			2	4
14	15:16	sun	67	1	15	14		sun	70	1	14	14		70	71
15	15:40	sun	41	0	5	30		sun	37	0	6	42		41	41
16	16:09	sun	43	0	11	50		sun	56	0	12	34		56	56
Total			995	100	94				1050	91	103			1066	1163
Weather am:	some high overcast but generally sunny - good vis						broken high cloud ~ 50% cover; light wind								
Weather pm:	some cloud in early PM, tail wind						broken high cloud ~ 50% cover; light to no wind at water level								
Comments:	tail wind in late PM but pilot managed to keep good position for viewing						despite clouds the sun prevailed most of the day making for very good visibility count day - all 10 vis. markers observed								

Flight #: 5
 Date: 21-Sep-99
 Pilot: Ken Knight, PWH

Observers Representing		Front: Colin Barnard ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:53		18	6	0			cloud	14	6	0			18	24
2	10:59		32	5	2			cloud	30	5	2			32	37
3A	11:06		82	18	14	5		cloud	85	14	14			85	100
3B	11:16		147	11	32	~150		cloud	146	5	31	~150	100's	147	158
4	11:33		40	4	24	~50		cloud	42	4	24	~50	100's	42	46
5	11:59		69	8	22	~150		cloud	72	1	21	~150		72	77
6	12:12		32	4	57	~130		cloud	33	3	53	~100		33	36
7	12:31		2	0	20	~30		cloud	2	0	20	some?		2	2
8	12:39		6	0	1	~15		cloud	5	0	1	~10		6	6
9	12:48		16	0	7	~12		cloud	16	0	8			16	16
10	12:57		29	0	11			cloud	23	0	11			29	29
11	13:11		42	0	22	~10		cloud	45	0	22			45	45
12	14:22		32	1	35	~10		cloud	34	2	38			34	36
13	14:40		0	0	9	~8		cloud	0	0	9	~6		0	0
14	14:51		49	8	27	~50		cloud	46	6	27	~50		49	57
15	15:18		21	5	22	~80		sun	21	5	23	~100		21	26
16	15:48		51	0	25	~800		sun	55	0	26	~800		55	55
Total			668	70	330				669	51	330			686	750
Weather am:	overcast/rain/broken cloud						cloudy with some spitting rain - no wind some sunny patches in late AM								
Weather pm:							high overcast but bright, good visibility								
Comments:							good visibility even with the overcast, no glare, no wind								

Flight #: 6
 Date: 29-Sep-99
 Pilot: Ken Knight, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Dan Bouillon ALCAN							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:01	cloud	17	0	0			cloud	18	0	0			18	18
2	11:06	cloud	39	0	4			cloud	42	0	6			42	42
3A	11:15	cloud	68	0	41		1000's	cloud/rain	62	0	41			68	68
3B	11:24	cloud/rain	66	0	31		100's	cloud/rain	56	0	32			66	66
4	11:37	cloud/rain	8	0	34			cloud/rain	6	0	33			8	8
5	11:54	cloud/rain	14	0	8	~200		cloud/rain	14	0	7	150*		14	14
6	12:04	cloud	3	0	25	~150	100's	cloud	2	0	17	125*	100's	3	3
7	12:24	cloud	1	0	7		100's	cloud	1	0	9		1000's	1	1
8	12:35	cloud	7	0	3		100's	cloud	7	0	3			7	7
9	12:51	cloud	3	0	6			cloud	3	0	7			3	3
10	13:02	cloud	3	0	7			cloud	3	0	6			3	3
11	13:18	cloud	3	0	12			cloud	4	0	12			4	4
12	14:34	cloud	3	0	7			cloud	2	0	8			3	3
13	14:46	wind	0	0	4			cloud	0	0	4			0	0
14	15:06	sun	9	0	2	~60		sun	9	0	3	55		9	9
15	15:30	sun	3	0	5	~dozen		cloud	3	0	6	12		3	3
16	15:54	cloud	4	0	8	~20		cloud	5	0	8	15		5	5
Total			251	0	204				237	0	202			257	257
Weather am:		cool (5 C) cloudy with some sunny breaks and a period of showers						broken cloud, light wind, rain in late AM							
Weather pm:		mostly cloudy - tailwind and some sun						broken cloud, light wind, gusty at times, occasional sun							
Comments:		OK visibility but not great (especially during rain - reaches 4 & 5) some AM wind but didn't affect vis - just a little bumpy some strong tailwind in PM did affect visibility in one reach						* spawning near Targe Creek							

Flight #: 7
 Date: 5-Oct-99
 Pilot: Ken Knight, PWH

Observers Representing		Front: Colin Barnard ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	12:10	cloud	19	0	0			cloud	16	0	0			19	19
2	12:17	cloud	21	1	5			cloud	22	0	5			22	22
3A	12:26	cloud	27	2	22			cloud	27	1	22		1000's	27	29
3B	12:35	sun	19	0	22			sun	18	0	23		1000's	19	19
4	12:46	sun	5	0	33			sun	4	0	30		1000's	5	5
5	12:58	sun	5	0	12	~150		sun	4	0	9	150	1000's	5	5
6	13:09	sun	0	0	36	~130		sun	0	0	23	150	100's	0	0
7	13:26	sun	1	0	2			sun	1	0	1			1	1
8	13:33	sun	6	0	4			cloud	6	0	4			6	6
9	13:45	cloud	2	0	10			cloud	2	0	10			2	2
10	13:56	cloud	1	0	12			cloud	1	0	10			1	1
11	14:14	cloud	1	0	9			cloud	0	0	9		100's	1	1
12	15:06	cloud	0	0	5			cloud	0	0	3		1000's	0	0
13	15:15	cloud	0	0	5			cloud	0	0	5			0	0
14	15:27	cloud	2	0	6			sun	2	0	6		100's	2	2
15	15:41	cloud	9	0	4	~75		sun	4	0	4	75		9	9
16	16:06	cloud/sun	3	0	3	~25		cloud	4	0	2	20		4	4
Total			121	3	190				111	1	166			123	125
Weather am:	fog - broken to blue above						foggy along river, no wind, no high cloud								
Weather pm:	sun and cloud						high overcast, no wind, good visibility								
Comments:							fog at the 'Hoof but clear patch to get in. Some thick fog along river (especially at top end). Sat a while at Lodge								

Flight #: 1
 Date: 23-Aug-00
 Pilot: Ken Knight

Observers Representing		Front: Colin Barnard ALCAN						Back: Dale Desrochers DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:32	cloud/rain	0	0	0			cloud	0	0	0			0	0
2	10:36	cloud/rain	0	1	0			cloud	0	1	0			0	1
3A	10:42	cloud	0	3	0			cloud	0	3	0			0	3
3B	10:48	cloud	0	27	0			cloud	0	28	0			0	28
4	11:02	cloud	0	110	0			cloud	0	110	0			0	110
5	11:16	cloud	0	23	0			cloud	0	25	0			0	25
6	11:26	cloud/sun	0	69	2	30		cloud	0	67	2	30		0	69
7	11:49	cloud/sun	0	10	0			cloud	0	14	0			0	14
8	12:00	cloud	0	10	0			cloud	0	5	0	6		0	10
9	12:14	cloud	0	5	0			cloud	0	6	0			0	6
10	12:22	cloud/rain	0	10	0			cloud	0	12	0			0	12
11	12:39	cloud/sun	0	55	0			cloud	0	52	0			0	55
12	13:51	cloud/sun	12	71	0			cloud	6	77	0			12	83
13	14:05	cloud/sun	0	48	1		sturgeon	cloud	0	48	1	10	sturgeon	0	48
14	14:35	c/s/r	0	20	0	25		cloud	0	19	0	25		0	20
15	15:00	c/s/r	0	22	0	25		cloud/rain	0	22	0	23		0	22
16	15:27	c/s/r	0	21	6	250	sturgeon	cloud	0	24	6	227	sturgeon	0	24
Total			12	505	9				6	513	9			12	530
Weather am:	poor, cloud, sunny breaks toward end, rain (light)						overcast with isolated showers								
Weather pm:	more sunny periods, light to moderate rain, occasional light winds						overcast with isolated showers								
Comments:	viewing conditions all day generally poor, worse in upper reaches sturgeon in reach 3 ~1 k d/s of Ft Fraser Hwy bridge, mid-channel on sand substrate, easy to ID; sturgeon in reach 16 ~0.5 k u/s of of Frank Read's, mid-channel on flat gravel substrate, easy to ID						water level in Nechako appeared high								

Flight #: 2
 Date: 30-Aug-00
 Pilot: Ken Knight, PWH

Observers Representing		Front: Dale Desrochers DFO						Back: Dan Bouillon ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:50	sun	0	11	0			sun	0	11	0			0	11
2	10:54	sun	0	23	0			sun	0	23	0			0	23
3A	11:01	sun	1	93	0			sun	1	95	0			1	96
3B	11:12	sun	3	45	1			sun	3	50	1			3	53
4	11:20	sun	0	179	2			sun	1	182	2			1	183
5	11:32	cloud	2	131	1			cloud	2	133	1			2	135
6	11:42	cloud	0	63	2			cloud	0	89	2			0	89
7	12:03	cloud	0	17	1			cloud	0	20	1			0	20
8	12:15	cloud	0	1	0			cloud	0	1	0			0	1
9	12:30	cloud	0	16	0			cloud	0	16	0			0	16
10	12:39	cloud/rain	0	10	0			cloud	0	9	0			0	10
11	12:55	cloud/rain	0	57	0			c/w/r	0	64	0			0	64
12	13:51	cloud	0	201	2			cloud	0	206	2			0	206
13	14:05	cloud	0	90	3			cloud	0	101	3			0	101
14	14:34	cloud/rain	0	7	0	150		cloud/rain	0	10	0	143		0	10
15	15:01	cloud/rain	2	34	3	240		cloud/rain	4	28	3	110		4	36
16	15:33	cloud	0	203	3	1900	sturgeon	cloud	0	212	3	2155	sturgeon	0	212
Total			8	1181	18				11	1250	18			11	1266
Weather am:	good visibility						visibility reduced dramatically when cloud moved in								
Weather pm:	visibility dramatically reduced due to cloud cover & glare						visibility reduced dramatically when cloud moved in								
Comments:	one sturgeon observed ~2 m in length, located u/s of Bond Bros. on right margin. Little sign of chinook redd digging High #'s of suckers noted						one sturgeon observed ~5 ft in length, located u/s of Bond Bros. on right margin. Little sign of chinook redd digging Lots of suckers observed in vicinity of spawning sites.								

Flight #: 3
 Date: 5-Sep-00
 Pilot: Ken Knight, PWH

Observers Representing		Front: Colin Barnard ALCAN						Back: Dale Desrochers DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:15	cloud/wind	8	46	0			cloud/wind	0	60	0			8	60
2	11:20	sun break	6	47	0			sun/wind	1	49	0			6	53
3A	11:28	sun break	13	144	1			sun/wind	11	137	1			13	157
3B	11:36	sun break	30	111	3			sun/wind	35	101	3			35	141
4	11:48	sun break	46	264	6			sun/wind	27	281	4			46	310
5	12:03	sun break	41	211	2	32		sun/wind	58	187	4	30		58	252
6	12:15	sun break	58	142	3			sun/wind	62	189	3			62	251
7	12:35	*	0	8	0			*	0	9	0			0	9
8	13:00	cloud/wind	6	7	0			cloud/wind	1	12	0			6	13
9	13:13	cloud/wind	8	4	0			cloud/wind	7	3	0			8	12
10	13:22	cloud/wind	9	32	0			cloud/wind	15	30	0			15	45
11	13:39	cloud/wind	110	24	1			cloud/wind	93	25	1			110	134
12	14:46	cloud/wind	114	52	0			sun/wind	128	35	0			128	166
13	14:59	cloud/wind	41	6	1			sun/wind	20	23	1			41	47
14	15:25	cloud/wind	26	2	0	26		cloud/wind	24	2	0	35		26	28
15	15:48	cloud/wind	20	25	1	60		cloud/wind	16	24	2	75		20	45
16	16:12	cloud/wind	41	3	3	250		sun/wind	31	12	6	400		41	44
Total			577	1128	21				529	1179	25			623	1767
Weather am:	wind, heavy surface ripple, rain						winds strong with heavy surface ripple, occassional rain and sunny periods								
Weather pm:	wind, cloud, mainly sunny						mainly sunny with cloudy periods								
Comments:	*poor visibility below Greer, high turbidity generally good vis for AM, but bad patches of heavy wind ripple and cloud throughout						*reaches 7 and 8 had extremely poor visibility due to heavy sediment input from Greer Creek generally good visibility except for occasional wind ripple								

Flight #: 4
 Date: 13-Sep-00
 Pilot: Ken Knight, PWH

Observers Representing		Front: Dale Desrochers DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:59	cloud	60	44	0				69	44	0			69	113
2	11:15	cloud	53	26	0				54	32	0			54	86
3A	11:25	cloud/rain	193	93	2	22			223	56	2	22		223	286
3B	11:39	cloud	322	25	1	15			311	31	1	8		322	347
4	11:58	cloud	125	47	2	12			142	30	2	12		142	172
5	12:32	cloud	245	59	5	30			265	51	5	30		265	316
6	12:37	cloud	257	22	18	15			270	28	17	15		270	298
7	12:58	cloud	19	5	0				30	6	0			30	36
8	13:06	cloud	36	2	2				31	0	2			36	38
9	13:19	cloud/rain	46	2	1				50	3	3			50	53
10	13:30	cloud	64	2	1	5			65	3	1			65	68
11	13:46	cloud/rain	254	1	4				230	11	14			254	255
12	15:04	cloud	334	11	9	15			338	8	9			338	346
13	15:17	cloud	41	11	7				35	8	7			41	52
14	15:39	cloud	121	3	2				128	6	3			128	134
15	16:10	cloud	48	0	3				51	0	6			51	51
16	16:35	cloud/sun	119	9	5	20			128	10	4	10		128	138
Total			2337	362	62				2420	327	76			2466	2789
Weather am:		cloudy with high ceiling, good light penetration resulting in excellent visibility													
Weather pm:		cloud with high ceiling, excellent visibility													
Comments:		Greer Creek still inputting sediment into Nechako, but at much reduced volume than previous flight, limited visibility for short periods only. Sox observed spawning in Nechako													

Flight #: 5
 Date: 21-Sep-00
 Pilot: Chris Norman, PWH

Observers Representing		Front: Dan Bouillon ALCAN						Back: Dale Desrochers DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:28	sun	52	0	0			sun/wind	43	0	0			52	52
2	10:33	sun	66	1	0			sun/wind	74	3	1			74	77
3A	10:40	sun	240	1	30	30		sun/wind	200	8	33	40		240	241
3B	10:48	sun	262	3	29	1		sun/wind	270	7	30			270	277
4	11:02	sun	80	0	32	40		sun/wind	81	1	41	30		81	82
5	11:20	sun	170	4	27			sun/wind	173	5	28	2		173	178
6	11:48	sun	68	10	76	1		sun/wind	75	6	66	5		75	81
7	11:49	sun	4	1	14			sun/wind	6	1	11			6	7
8	11:58	sun	24	1	8			sun/wind	24	2	5			24	26
9	12:14	sun/wind	39	1	16			sun/wind	32	1	16			39	40
10	12:22	sun/wind	36	1	27			sun/wind	38	1	26			38	39
11	12:38	sun/wind	83	0	65			sun/wind	84	0	62			84	84
12	13:40	sun	97	5	120			sun/wind	96	5	91			97	102
13	13:53	sun	15	2	77			sun/wind	17	2	58			17	19
14	14:17	sun	52	1	32			sun/wind	60	3	26			60	63
15	14:44	sun	50	1	34			sun/wind	53	2	35			53	55
16	15:11	sun	44	0	30			sun/wind	44	2	29			44	46
Total			1382	32	617				1370	49	558			1427	1469
Weather am:		100% sun, gusty winds at times						sunny (clear skys), strong winds from north (good visibility)							
Weather pm:		100% sun, gusty winds at times						sunny with isolated cloud, gusting winds, good visibility							
Comments:								majority of migrating/holding fish were comprised of post-spawners with marginal signs of life. Little sedimentation from Greer Creek, visibility good. No sox seen in Nautley							

Flight #: 6
Date: 27-Sep-00
Pilot: Chris Norman, PWH

Observers Representing		Front: Dale Desrochers DFO						Back: Dan Bouillon ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other		
1	10:19	sun	43	0	12			sun	45	0	13			45	45
2	10:24	sun	55	1	11			sun	62	1	10			62	63
3A	10:30	sun	100	2	93	30		sun	96	1	99	30		100	102
3B	10:38	sun	77	10	137	10		sun	72	5	142			77	87
4	10:52	sun	12	3	154	25		sun	12	2	155	20		12	15
5	11:06	sun	34	2	76			sun	34	1	62			34	36
6	11:14	sun	16	3	131			sun	16	2	135			16	19
7	11:33	sun	0	1	28			sun	0	1	35			0	1
8	11:41	sun	5	3	16			sun	5	3	17			5	8
9	11:53	sun	11	1	23			sun	12	1	28			12	13
10	12:00	sun	6	0	25			sun	6	1	24			6	7
11	12:12	sun	15	0	47			sun	16	0	50			16	16
12	13:18	sun	12	0	136			sun	11	1	148			12	12
13	13:28	sun	2	2	49			sun	2	1	50			2	4
14	13:46	sun	12	0	38			sun	10	0	37			12	12
15	14:08	sun	7	0	34			sun	6	0	37			7	7
16	14:29	sun	14	0	24			sun	12	0	27			14	14
Total			421	28	1034				417	20	1069			432	461
Weather am:	sunny (no wind), high scattered overcast, excellent visibility														
Weather pm:	sunny (no wind), high scattered overcast, excellent visibility														
Comments:	Greer Creek slight sediment deposit, good visibility														

Flight #: 7
 Date: 4-Oct-00
 Pilot: Ken Knight, PWH

Observers Representing		Front: Colin Barnard ALCAN						Back: Dale Desrochers DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:49	sun	16	0	1			sun	10	0	1			16	16
2	10:54	sun	12	0	8			sun	11	0	7			12	12
3A	11:01	sun	10	1	46	14		sun	7	1	50	10		10	11
3B	11:07	sun	3	2	60			sun	4	1	63			4	5
4	11:38	sun	4	1	76	20		sun	2	0	73	20		4	5
5	11:47	sun	2	1	18	20		sun	3	0	24			3	3
6	11:54	sun	3	0	63			sun	3	0	54			3	3
7	12:06	sun	0	0	10			sun	0	0	12			0	0
8	12:12	sun	0	0	5			sun	0	0	5			0	0
9	12:22	sun	2	0	10			sun	2	0	8			2	2
10	12:29	sun	1	0	10			sun	1	0	12			1	1
11	12:38	sun	1	0	16			sun	1	1	15			1	2
12	13:27	cloud	2	0	63			cloud	2	0	64			2	2
13	13:33	cloud	0	0	20			cloud	0	0	10			0	0
14	13:47	cloud	1	0	12			cloud	1	0	11			1	1
15	14:05	cloud	0	0	5			cloud	0	0	7			0	0
16	14:24	cloud	0	0	9	1		cloud	0	0	12	1		0	0
Total			57	5	432				47	3	428			59	63
Weather am:								clear skys, no wind, sunny conditions - excellent visibility							
Weather pm:								cloudy skys, patches of sun, no wind - excellent visibility							
Comments:								25 sockeye observed in the Nautley							

Flight #: 1
 Date: 22-Aug-01
 Pilot: Mike, PWH

Observers Representing		Front: Colin Barnard ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:46	turbid/w	0	0	0			turb/deep	0	0	0			0	0
2	10:48	turbid/w	0	2	0			turb/deep	0	2	0			0	2
3A	10:53	turbid/w	0	1	0			turb/deep	0	1	0			0	1
3B	10:57	turbid/w	0	10	0			turb/deep	0	6	0			0	10
4	11:09	turbid/w	0	5	0			turb/deep	0	4	0			0	5
5	11:23	turbid/w	0	9	0			turb/deep	0	8	0			0	9
6	11:31	turbid/w	1	10	0			turb/deep	1	8	0			1	11
7	11:48	turbid/w	0	0	0			turb/deep	0	0	0			0	0
8	11:54	turbid/w	0	1	0			turb/deep	0	2	0			0	2
9	12:05	turbid/w	0	2	0			turb/deep	0	3	0			0	3
10	12:11	turbid/w	0	14	0			t/d+wind	0	12	0			0	14
11	12:23	turbid/w	3	17	0			t/d+wind	2	18	0			3	20
12	13:17	turbid/w	0	11	0			t/d+wind	0	8	0			0	11
13	13:26	turbid/w	0	4	0			t/d+wind	0	2	0			0	4
14	13:42	turbid/w	0	10	0			t/d+wind	0	12	0			0	12
15	14:05	turbid/w	0	3	0			sun/wind	0	3	0			0	3
16	14:25	turbid/w	0	232	0	75		sun/wind	0	217	0	75		0	232
Total			4	331	0				3	306	0			4	339
Weather am:	sun, broken cloud, wind!						cloudy, wind								
Weather pm:	more wind, more clouds, sun, rain						little more sun but more wind too								
Comments:	off Nechako Lodge @ 1041						water very high and seemed a little turbid very poor visibility especially into deeper sections								

Flight #: 2
 Date: 28-Aug-01
 Pilot: Chris Norman, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Justus Benckhuysen ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:13	sun	0	0	0			sun	0	0	0			0	0
2	11:16	sun	0	0	0			sun	0	0	0			0	0
3A	11:27	sun	0	131	0			sun	0	93	0			0	131
3B	11:28	sun	0	114	0		dozens	sun	0	120	0			0	120
4	11:38	sun	2	140	0		dozens	sun	2	128	0			2	142
5	11:51	sun	33	63	0		dozens	sun	18	90	0			33	108
6	12:01	sun	7	81	0	5	100's	sun	8	92	0	5		8	100
7	12:18	sun	0	11	0		dozens	sun	0	9	0			0	11
8	12:26	sun	0	4	0			sun	0	3	0			0	4
9	12:38	sun	0	8	0		dozens	sun	0	4	0			0	8
10	12:43	sun	2	21	0			sun	0	20	0			2	23
11	12:55	sun	26	128	0			sun	17	153	0			26	170
12	13:33	sun	12	136	0			sun	34	102	0			34	148
13	13:46	sun	12	125	0			sun	14	121	0			14	137
14	16:03	sun	4	5	0	30		sun	3	2	0	3		4	9
15	16:24	sun	8	11	0	56		sun	2	12	0	12		8	19
16	16:49	sun	11	92	0	80		sun	21	79	0*			21	103
Total			117	1070	0				119	1028	0		**	152	1233
Weather am:	bright and sunny, no wind						sunny, very few clouds, no wind, warm								
Weather pm:							sunny, very few clouds, no wind, warm								
Comments:							* sockeye in reach 16 not recorded, approx 40 observed ** many schools of suckers in most reaches where chinook								

Flight #: 3
 Date: 5-Sep-01
 Pilot: Chris Norman, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Justus Benckhuysen ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:52	sun	1	9	0			sun/wind	2	16	0		suckers	2	18
2	10:56	sun	5	33	0			sun/wind	4	30	0		suckers	5	38
3A	11:02	sun	46	374	0			sun/wind	64	344	0		suckers	64	420
3B	11:13	sun	74	130	0			sun/wind	64	137	0		suckers	74	204
4	11:27	sun	48	197	3			sun/wind	47	214	2		suckers	48	261
5	11:41	sun	92	211	1	50		sun/wind	71	258	1	20	suckers	92	329
6	11:53	sun	122	169	4			sun/wind	137	178	2	5	suckers	137	315
7	12:11	sun	8	33	1			sun/wind	12	27	0		suckers	12	41
8	12:20	sun	12	39	1			sun/wind	10	15	1		suckers	12	51
9	12:34	sun	12	8	3			sun/wind	18	10	1		suckers	18	28
10	12:41	sun	27	57	3			sun/wind	25	60	0		suckers	27	85
11	12:53	sun	140	114	2			sun/wind	131	117	1		suckers	140	254
12	13:54	sun	288	194	3			sun/wind	243	212	2		suckers	288	482
13	14:10	sun	31	174	3			sun/wind	28	148	0	5	suckers	31	205
14	14:32	sun	62	40	1	40		sun/wind	62	39	0	27	suckers	62	102
15	14:56	sun	27	43	0	300		sun/wind	21	45	0	200	suckers	27	70
16	15:23	sun	75	135	2	1000		sun/wind	77	114	3	~1000	suckers	77	210
Total			1070	1960	27				1016	1964	13		1000's	1116	3113
Weather am:	good some high overcast/some wind						broken clouds, wind + some ripple in water in some areas								
Weather pm:	good some high overcast/some wind						broken clouds, wind + some ripple in water in some areas								
Comments:	green algae from Cheslatta down to a little past Swanson						end 16:01 - mostly good visibility with sun, occassional patch of cloud and/or ripple on water. Water clarity good								

Flight #: 4
 Date: 14-Sep-01
 Pilot: Ken Knight, PWH

Observers Representing		Front: Colin Barnard ALCAN						Back: Dale Desrochers DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:13	sun	200	42	2			sun	181	47	2			200	242
2	11:21	sun	27	7	1			sun	19	32	1			27	51
3A	11:29	sun	642	168	7			sun	634	220	7			642	854
3B	11:52	sun	400	150	5	70		sun	383	168	5	65		400	551
4	12:33	sun	300	58	16			sun	209	147	16			300	358
5	12:45	sun	514	120	13	200		sun	477	173	13	175		514	650
6	13:00	sun	400	181	34	40		sun	372	121	34	40		400	581
7	13:21	sun	101	70	7	25		sun	121	19	6			121	171
8	13:35	sun	78	42	2			sun	82	42	2			82	124
9	13:48	sun	90	50	8			sun	112	21	8			112	140
10	13:58	sun	100	191	15			sun	235	36	11			235	291
11	15:15	sun	298	151	9			sun	322	82	9			322	449
12	15:29	sun	355	140	34	6		sun	420	103	28	20		420	523
13	15:42	sun	180	49	9	15		sun	88	44	10	10		180	229
14	15:55	sun	300	35	12	100	sturgeon	sun	331	43	12	100	sturgeon	331	374
15	16:21	sun	210	71	7	250		sun	245	35	9	500		245	281
16	16:47	sun	200	120	11	300		sun	276	41	11	400		276	320
Total			4395	1645	192				4507	1374	184			4807	6189
Weather am:	calm, sunny, warm						no wind, sunny excellent visibility								
Weather pm:	calm, sunny, warm						no wind, sunny excellent visibility								
Comments:	6040 live total														

Flight #: 5
 Date: 19-Sep-01
 Pilot: Ken Knight, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:55	sun	79	9	3			s/c/w	96	8	3			96	104
2	11:01	sun	183	9	1			s/c/w	194	10	1			194	204
3A	11:10	sun	310	68	30			s/c/w	390	34	22			390	424
3B	11:18	sun	388	30	26	60		s/c/w	386	36	26	60		388	422
4	11:37	sun	187	31	60			s/c/w	190	22	57			190	218
5	11:48	sun	300	80	50	150		s/c/w	300	83	49	160		300	383
6	11:57	part cloud	253	13	111			s/c/w	220	51	118			253	271
7	12:08	part cloud	10	4	7			s/c/w	12	4	5			12	16
8	12:15	part cloud	38	3	30			s/c/w	42	6	14			42	48
9	12:26	part cloud	63	2	29			s/c/w	46	3	39			63	65
10	12:33	sun	67	0	31			s/c/w	82	6	45			82	88
11	12:47	part cloud	194	3	83			s/c/w	190	12	79			194	202
12	13:50	part cloud	207	17	147			s/c/w	202	13	148			207	224
13	14:00	sun/wind	30	0	47			s/c/w	29	10	61			30	39
14	14:17	sun	119	3	62	70		s/c/w	148	0	66	70		148	148
15	14:36	sun	117	0	42	50		s/c/w	125	0	44	40		125	125
16	14:56	sun	139	1	44	60		s/c/w	128	0	61	60		139	140
Total			2684	273	803				2780	298	838			2853	3121
Weather am:	sunny, light wind, partly cloudy						breezy, clear								
Weather pm:	sunny, fairly strong tail wind below Nautley						breezy, cloud, sun								
Comments:	excellent viewing when sunny, good the rest of the day even with some clouds, except bad glare in section 10														

Flight #: 6
 Date: 26-Sep-01
 Pilot: Ken Knight

Observers Representing		Front: Colin Barnard ALCAN						Back: Byron Nutton DFO							
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:57	cloud/rain	68	0	9			cloud	61	0	7			68	68
2	11:02	cloud/rain	55	0	48			cloud	54	0	44			55	55
3A	11:10	cloud/rain	114	0	138			cloud	107	0	125			114	114
3B	11:18	cloud/rain	127	2	178	80		cloud	118	2	155	80		127	129
4	11:32	cloud/rain	49	3	185			cloud	45	2	171			49	52
5	11:43	cloud/rain	82	0	164	135		cloud	77	0	131	140		82	82
6	11:54	cloud/rain	74	2	291	8		cloud	69	3	232	6		74	76
7	12:11	cloud/rain	9	2	59			cloud	8	2	58			9	11
8	12:19	cloud/rain	10	0	25			cloud	9	0	29			10	10
9	12:32	cloud/rain	16	0	45			cloud	14	0	38			16	16
10	12:40	cloud/rain	12	0	63			cloud	11	0	40			12	12
11	12:51	cloud/rain	15	0	145			cloud/wind	14	0	134			15	15
12	14:13	cloud/rain	15	0	134			sun	15	0	96			15	15
13	14:22	cloud/rain	3	0	19	1		cloud/wind	3	0	163	1		3	3
14	14:39	cloud/rain	8	0	75	6		cloud/wind	8	0	66			8	8
15	14:57	cloud/rain	3	0	61			cloud	4	0	33	6		4	4
16	15:13	cloud/rain	8	0	50			cloud	8	0	43			8	8
Total			668	9	1689				625	9	1565			669	678
Weather am:	overcast, light rain, showers						overcast, poor light								
Weather pm:	broken to blue, light winds						overcast with some sunny breaks + a little more wind								
Comments:							excellent vis in the morning								

Flight #: 7
 Date: 3-Oct-01
 Pilot: Ken Knight, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Justus Benckhuysen ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:59	sun	10	0	2				6	0	0			10	10
2	11:03	sun	7	0	7				7	0	2			7	7
3A	11:08	sun	20	0	68	50			17	0	58	40		20	20
3B	11:14	sun	15	0	127				15	0	86	1		15	15
4	11:22	sun	3	0	118				3	0	108			3	3
5	11:28	sun	8	0	62	30			8	0	60	30		8	8
6	11:33	sun	7	0	131	2			7	0	151	1		7	7
7	11:42	sun	0	0	32				0	0	24			0	0
8	11:46	sun	0	0	7				0	0	11			0	0
9	11:55	sun	1	0	29				0	0	34			1	1
10	11:59	sun	0	0	23				0	0	20			0	0
11	12:07	sun	0	0	44				0	0	52			0	0
12	12:56	sun	0	0	68				0	0	64			0	0
13	13:00	sun	0	0	37				0	0	39			0	0
14	13:10	sun	0	0	5				0	0	7			0	0
15	13:22	sun	0	0	13				0	0	12			0	0
16	13:36	sun	1	0	5				1	0	8			1	1
Total			72	0	778				64	0	736			72	72
Weather am:	sunny, calm						sunny, no clouds, no wind								
Weather pm:	sunny, calm						sunny, no clouds, no wind								
Comments:	excellent viewing						stop 13:57								

Flight #: 1
 Date: 27-Aug-02
 Pilot: Ken Knight, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Justus Benckhuysen ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:25		0	1	0	0		sun	0	1	0			0	1
2	10:29		0	0	0	0		sun	0	0	0			0	0
3A	10:33		0	120	0	0		sun	0	104	0			0	120
3B	10:42		3	24	0	0		sun	5	48	0		sucker	5	53
4	10:48		3	42	0	0		sun	3	41	0		sucker	3	45
5	10:55		2	26	0	0		sun	2	16	0		sucker	2	28
6	11:03		0	61	0	0		sun	0	64	0		sucker	0	64
7	11:17		0	14	0	0		sun	0	14	0		sucker	0	14
8	11:22		0	0	0	0		sun	0	0	0		sucker	0	0
9	11:31		0	10	0	0		sun	0	12	0		sucker	0	12
10	11:35		0	4	0	0		sun	0	2	0		sucker	0	4
11	11:43		0	33	0	0		sun	0	13	0		sucker	0	33
12	12:34		0	43	0	0		sun	0	38	0			0	43
13	12:42		0	10	0	0		sun	0	19	0			0	19
14	12:56		0	0	0	200		sun	0	0	0	60		0	0
15	13:10		0	2	0	100		sun	0	0	0	100		0	2
16	13:27		0	16	0	300		sun	0	19	0	300		0	19
Total			8	406	0				10	391	0			10	457
Weather am:	mainly sunny w some high "cloud", no wind						sunny light wind								
Weather pm:	weather good as in AM, but deep/dark below Nautley														
Comments:	good visibility, but fairly green water, therefore kinda dark couple hundred sox at Nautley bridge						water very green light overcast								

Flight #: 2
 Date: 4-Sep-02
 Pilot: Chris Norman, PWH

Observers Representing		Front: Justus Benckhuysen ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:48	c/w	0	0	0				0	0	0			0	0
2	10:51	c/w	0	0	0				0	0	0			0	0
3A	10:56	c/w	4	91	0		sucker		6	102	0			6	108
3B	11:08	c/w	18	30	0				20	24	0			20	48
4	11:19	c/w	0	1	0				2	0	0			2	2
5	11:29	c/w	14	26	0				20	27	0			20	47
6	11:37	c/w	6	20	0				6	25	0			6	31
7	11:53	c/w	2	0	0				2	0	0			2	2
8	12:00	c/w	0	0	0				0	0	0			0	0
9	12:12	c/w	0	0	0				0	4	0			0	4
10	12:19	c/w	2	6	0				2	6	0			2	8
11	12:30	c/w	12	14	0				18	22	0			18	40
12	14:48	c/w	8	46	2				16	38	2			16	54
13	14:57	c/w	0	14	2				0	13	2			0	14
14	15:14	c/w	3	0	0	50			3	0	0	50		3	3
15	15:30	c/w	0	0	0				0	0	0			0	0
16	15:54	c/w	3	9	0	500			3	18	0	300		3	21
Total			72	257	4				98	279	4			98	382
Weather am:	cloudy, cold						cloudy, some periods of scattered showers/wind								
Weather pm:	cloudy, cold						vis OK but not great								
Comments:	light wind ripple most of the day, cloudy periods of rain/drizzle						same as morning								

Flight #: 3
Date: 11-Sep-02
Pilot: Chris Norman, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	12:59		60	10	0				60	22	1			60	82
2	13:05		65	10	0				76	9	0			76	85
3A	13:13		236	122	0				200	150	0	10		236	358
3B	13:25		202	58	6	20			205	76	6	20		205	281
4	13:39		78	71	0	4			111	50	6	5		111	161
5	13:53		87	199	5	120			200	104	4	120		200	304
6	14:04		137	102	4	10			137	100	4	10		137	239
7	14:27		13	23	0				22	14	0	0		22	36
8	14:37		76	49	0				81	28	1			81	125
9	14:55		100	30	1				104	32	1			104	136
10	15:07		72	31	0				77	21	0			77	103
11	15:24		170	36	0				102	96	0			170	206
12	16:02		140	42	1				175	37	1			175	212
13	16:15		13	12	2	25			15	12	2	25		15	27
14	16:31		109	61	0	1000			118	96	0	1000+		118	214
15	16:51		64	26	0	1000's			82	30	2	1000 +		82	112
16	17:13		84	7	0	1000's			52	40	0	1000 +		84	92
Total			1706	889	19				1817	917	28			1953	2773
Weather am:	dam to Diamond Is. - calm,sunny, some puffy white clouds good vis noon to 3:30 PM						mainly sunny, light winds								
Weather pm:	high overcast - sun getting low - glare														
Comments:	late start due to fog in PG														

Flight #: 4
 Date: 18-Sep-02
 Pilot:

Observers Representing		Front: Colin Barnard ALCAN						Back: Dale Desrochers DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:19	c/s/w	78	30	0			c/w	85	11	0			85	108
2	11:26	c/s/w	60	39	0	15		c/w	90	15	0			90	105
3A	11:38	c/s/w	140	142	4	60		c/w	229	19	3	50		229	282
3B	11:44	c/s/w	200	123	23	45		cloud	231	93	23	45		231	324
4	12:30	c/s/w	90	12	14	10		cloud	76	9	15			90	102
5	12:43	c/s/w	179	30	4	250		cloud	170	22	4	250		179	209
6	12:56	c/s/w	125	49	12	30		cloud	168	10	12			168	178
7	13:13	c/s/w	16	2	9	2		c/r	13	0	9	10		16	18
8	13:20	c/s/w	87	6	3	2		c/r	65	1	4			87	93
9	13:35	c/s/w	131	12	10			cloud	124	5	11			131	143
10	13:47	c/s/w	70	5	4			cloud	63	7	4			70	75
11	14:56	c/s/w	90	12	4	6		cloud	77	10	4	10		90	102
12	15:12	s/c	120	15	16	5		c/s	114	8	15			120	135
13	15:23	s/c	28	2	9	5		cloud	18	4	9			28	30
14	15:37	s/c	111	20	13	40	sturgeon	cloud	143	2	12	30	sturgeon	143	145
15	16:06	s/c	139	4	16	400		cloud	130	3	14	350		139	143
16	16:33	s/c	80	11	2	1500		c/s	75	4	4	800		80	91
Total			1744	514	143				1871	223	143			1976	2283
Weather am:	wind, cloud, rain, some sun						overcast with light winds								
Weather pm:	more sun, no wind														
Comments:															

Flight #: 5
 Date: 24-Sep-02
 Pilot: Ken Knight, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:15		64	3	1				83	3	1			83	86
2	11:24		127	0	2				145	0	2			145	145
3A	11:31		195	0	43				220	0	47	1		220	220
3B	11:40		177	2	54	60			210	4	48	60		210	214
4	11:51		34	6	51				42	5	46	6		42	47
5	12:00		103	0	41	150			110	0	38	160		110	110
6	12:10		75	0	66				71	2	67	20		75	75
7	12:20		4	0	10				2	0	9	6		4	4
8	12:25		12	2	23				20	0	20			20	20
9	12:35		69	0	30				50	0	28			69	69
10	12:40		23	1	15				37	1	14			37	38
11	12:50		40	0	19				43	0	20	6		43	43
12	13:50		39	0	50				30	0	24			39	39
13	13:55		5	0	16				6	0	16			6	6
14	14:10		64	0	11				81	0	16			81	81
15	14:28		76	0	16				70	0	24			76	76
16	14:45		52	0	4	10			50	0	15	60		52	52
Total			1159	14	452				1270	15	435			1312	1325
Weather am:	mainly sunny, some scattered high cloud no rain						mainly sunny, high cloud broken, light winds								
Weather pm:	same as morning						same as morning								
Comments:															

Flight #: 6
Date: 1-Oct-02
Pilot: Chris Norman, PWH

Observers Representing		Front: Justus Benckhuysen ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:00	sun	19	0	2				20	0	4			20	20
2	11:04	sun	19	0	14				21	0	12			21	21
3A	11:10	sun	44	0	71				53	0	81	1		53	53
3B	11:16	sun	27	0	82	60			26	0	80	60		27	27
4	11:29	sun	2	0	56				1	0	62			2	2
5	11:39	sun	6	0	16	60			6	0	26	60		6	6
6	11:48	sun	4	0	34				4	0	37			4	4
7	12:04	sun	0	0	7	1			0	0	8			0	0
8	12:10	sun	0	0	4				0	0	7			0	0
9	12:21	sun	0	0	19				0	0	22			0	0
10	12:30	sun	3	0	16				3	0	12			3	3
11	12:41	sun	0	0	12				0	0	9			0	0
12	13:28	sun	1	0	10	5			1	0	14			1	1
13	13:41	sun	0	0	3				0	0	3			0	0
14	13:55	sun	2	0	6				2	0	10	10		2	2
15	14:15	sun	0	0	5	5			0	0	5	12		0	0
16	14:38	sun	4	0	2	60			4	0	4	150		4	4
Total			131	0	359				141	0	396			143	143
Weather am:		sun/calm						some high overcast - excellent visibility							
Weather pm:		wind ripple, sun						increasing high cloud but still good vis through spawning areas							
Comments:															

Flight #: 1
 Date: 27-Aug-03
 Pilot: Chris Norman, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:20	some clou	0	0	0				2	1	0			2	3
2	10:25	sunny	0	4	0				0	3	0			0	4
3A	10:30	sunny	0	99	1				0	106	1			0	106
3B	10:38	some clou	0	48	0				0	43	0			0	48
4	10:49	some clou	0	118	1	20			0	121	1	20		0	121
5	11:00	some clou	0	71	0				0	75	0	6		0	75
6	11:08	sunny	0	50	0				0	55	0			0	55
7	11:24	sunny	0	3	0				0	4	0			0	4
8	11:30	sunny	0	2	0				0	2	0			0	2
9	11:41	sunny	0	14	0				0	22	0			0	22
10	11:48	sunny	0	28	1				0	28	1			0	28
11	12:00	sunny	2	71	0				5	70	0	5		5	75
12	12:52	sunny	0	82	0				0	77	0			0	82
13	13:04	cloud/wind	0	18	1		sturgeon		1	20	0		sturgeon	1	21
14	13:24	cloud/wind	0	6	0	20			0	9	0	15		0	9
15	13:43	cloud	0	10	0	60			0	10	0	65		0	10
16	14:07	some clou	0	81	0	300			0	87	0	250		0	87
Total			2	705	4				8	733	3			8	752
Weather am:	broken overcast						high broken cloud, blue sky, light winds, improving								
Weather pm:	high overcast, some sunny breaks, some wind						more blue sky, winds constant								
Comments:	visibility excellent to good in the morning, good to fair in the afternoon, except for the deep/dark/green holes.														

Flight #: 2
 Date: 3-Sep-03
 Pilot: Robert Aylwin, PWH

Observers Representing		Front: Colin Barnard ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:26		1	58	0			sun	0	53	0			1	59
2	10:32		0	15	1			sun	0	12	1			0	15
3A	10:40		22	198	1			sun	22	187	1			22	220
3B	10:49		144	35	2			sun	116	59	2			144	179
4	11:05		33	200	2			sun	30	183	2			33	233
5	11:21		40	282	1			sun	49	250	0			49	322
6	11:33		40	162	1			sun	37	158	1			40	202
7	11:53		4	5	1			sun	3	5	1			4	9
8	11:58		13	61	0			sun	13	59	0			13	74
9	12:13		12	58	0			sun	13	57	0			13	70
10	12:21		25	162	0			sun	0	168	0			25	187
11	12:34		37	198	0			sun	36	205	0			37	241
12	13:49		25	170	3	1		sun	20	166	1	1		25	195
13	13:44		10	97	0	90		cloud	0	108	0	100		10	108
14	14:08		37	80	3	75	*2 sturg	cloud	20	77	2	100	*sturgeon	37	117
15	14:36		28	30	0	700		sun	24	33	0	700		28	58
16	14:57		16	144	0	600		sun	20	127	0	600		20	160
Total			487	1955	15				403	1907	11			501	2449
Weather am:	sunny, warm, no clouds, no wind						sunny, warm, no wind, excellent viewing								
Weather pm:	sunny, warm, some clouds, no wind						sunny, warm, no wind, some cloud								
Comments:	*2 sturgeon, 1 ~3-4 feet, 1 ~5-7 feet sitting in shallows & interrupted by helicopter shadow with a spectacular and violent reaction						nearly perfect viewing conditions *confirmed 1 sturgeon 6-8 feet long, possibly second smaller fish								

Flight #: 3
 Date: 10-Sep-03
 Pilot: Rick Klassen, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:22	cloud	9	96	0				12	97	0			12	109
2	10:28	cloud	35	10	0		1000's		46	6	0			46	52
3A	10:38	cloud	81	150	5	6			90	143	4	8		90	233
3B	10:52	cloud	159	40	7				181	30	8			181	211
4	11:10	cloud	30	128	10				42	104	10			42	158
5	11:26	cloud	116	126	5	13			106	152	5	12		116	258
6	11:41	cloud	157	49	9				150	72	9			157	222
7	11:54	cloud	8	0	0				10	0	0			10	10
8	11:58	cloud	20	7	0				20	10	0			20	30
9	12:08	cloud	92	16	1				95	20	1			95	115
10	12:17	cloud	68	51	0				70	60	0			70	130
11	12:30	cloud	169	65	2				200	45	2			200	245
12	13:19	cloud	142	110	6				120	102	6			142	252
13	13:28	cloud	30	13	0				27	12	1			30	43
14	13:43	cloud	56	18	4	12			59	14	3	12		59	74
15	14:05	cloud	55	17	0	50			60	16	0	75		60	76
16	14:26	cloud	69	14	4				70	20	4			70	90
Total			1296	910	53				1358	903	53			1400	2308
Weather am:	overcast, light rain early morning clear up late morning						light winds, clouds, rain, vis picked up ~10:45								
Weather pm:	overcast						light winds, cloud cover, some bright spots								
Comments:	high overcast all day, pretty good vis except in deep areas						conditions for viewing improving throughout the day								

Flight #: 4
 Date: 12-Sep-03
 Pilot: Ken Knight, PWH

Observers Representing		Front: Colin barnard ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	12:02		8	119	0			sun	4	119	0			8	127
2	12:08		40	4	0			sun	9	36	0			40	45
3A	12:15		90	111	6			sun	86	104	5			90	201
3B	12:22		160	48	5			sun	163	47	5			163	210
4	12:32		75	40	14			sun	58	48	10			75	115
5	12:46		150	33	5	20		cloud	156	21	5	20		156	183
6	12:55		180	59	16	20		sun	173	68	14			180	241
7	13:11		8	6	1			sun	8	5	2			8	14
8	13:16		40	27	3			sun	52	10	3			52	67
9	13:27		80	44	7			sun	77	28	7			80	124
10	13:34		99	50				sun	92	45	0			99	149
11	13:45		168	110	2			sun	205	76	2			205	281
12	14:14		240	49	8			wind	234	27	8			240	289
13	14:23		36	20	3			wind	44	8	2			44	56
14	10:48		100	65	1	500		wind	110	30	1	500		110	165
15	10:21		209	100	0	700		wind	209	55	0	700		209	309
16	9:45		105	200	5	1500 +		wind	201	92	2	1500		201	305
Total			1788	1085	76				1881	819	66			1960	2881
Weather am:	clear blue, winds to 25						sun, blue sky excellent visibility except for some wind ripple								
Weather pm:	sun, clouds, winds to 30						some broken clouds, windy but didn't effect visibility until the end of the day								
Comments:	flew u/s from Vanderhoof in AM to Nautley, across to lodge d/s to Nautley in PM, excellent visibility both ways						due to winds, counted upstream from Vanderhoof to the Nautley in the morning, then to lodge and down to Nautley								

Flight #: 5
 Date: 17-Sep-03
 Pilot: Chris Norman, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:32	shadow	67	68	0	2			83	60	0	2		83	143
2	10:38	shadow	70	9	0				86	30	0			86	116
3A	10:47	sun	257	54	7				295	30	8			295	325
3B	10:57	sun/cloud	310	23	13				305	42	12			310	347
4	11:12	sun	74	6	22	35			78	6	18	40		78	84
5	11:25	cloud	240	29	7	125			268	30	6	125		268	298
6	11:36	cloud	200	23	18				229	40	13			229	269
7	11:55	cloud/wind	12	4	1				15	4	1			15	19
8	12:01	cloud/wind	61	5	2				60	3	3			61	66
9	12:15	cloud/wind	103	5	4				107	6	4			107	113
10	12:24	sun	91	3	3				119	5	3			119	124
11	12:37	sun	219	14	11				230	13	9			230	243
12	13:30	sun	249	8	10				246	8	9			249	257
13	13:43	wind	22	0	6	30			24	0	4	24		24	24
14	14:01	sun	313	1	4				332	0	3			332	332
15	14:28	sun	267	12	5	250			280	16	5	250		280	296
16	14:55	cloud	172	8	3	300			188	10	3	300		188	198
Total			2727	272	116				2945	303	101			2954	3254
Weather am:	broken clouds, mostly sunny, some light winds						sunny, high broken								
Weather pm:	mostly sunny, some light wind						sunny, high broken, wind picking up								
Comments:	visibility good to excellent														

Flight #: 6
 Date: 23-Sep-03
 Pilot: Ken Knight, PWH

Observers Representing		Front: Colin Barnard ALCAN						Back: Byron Nutton DFO						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	10:52		77	7	0			shadow	56	6	0			77	84
2	10:58		140	3	1			shadow	121	0	1			140	143
3A	11:06		276	10	9	20		sun	233	14	10	20		276	286
3B	11:21		237	14	28	6		sun	209	12	26			237	251
4	11:34		59	4	34	4		sun	53	5	32			59	63
5	11:46		228	10	17	30		sun	201	11	16	30		228	238
6	11:57		128	10	30	20		sun	110	10	37			128	138
7	12:10		4	1	4			sun	3	1	4			4	5
8	12:21		71	2	2			sun	59	2	4			71	73
9	12:33		97	5	20			sun	99	0	25			99	102
10	12:42		102	2	14			sun	92	1	14			102	104
11	12:54		126	5	31	2		sun	115	4	31			126	131
12	13:40		118	7	37			sun	118	5	36			118	125
13	13:49		26	3	21			sun	27	2	26			27	29
14	14:06		302	8	44	500		sun	293	4	45	500		302	310
15	14:37		255	12	26	400		sun	234	6	26	400		255	267
16	15:03		192	11	16	500		sun	188	10	16	500		192	203
Total			2438	114	334				2211	93	349			2441	2552
Weather am:	calm, sun, no cloud						sun - no wind, no cloud, perfect visibility								
Weather pm:	calm, sun, some high cloud drifting in						some high overcast, some light wind, excellent visibility								
Comments:							no sox in Nautley, some debris from lake from yesterday's wind								

Flight #: 7
 Date: 1-Oct-03
 Pilot: Ken Knight, PWH

Observers Representing		Front: Byron Nutton DFO						Back: Colin Barnard ALCAN						Max on Redds	Max Live
River Section	Start	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Visibility Index	On Redds	M / H	Carcass	Sockeye	Other	Max on Redds	Max Live
1	11:41	shadow	66	1	2				80	5	2			80	85
2	11:46	shadow	54	1	4				56	0	4			56	56
3A	11:54	shadow	88	0	60	100			94	0	56	100		94	94
3B	12:02	sun	40	2	77				41	0	66			41	42
4	12:10	sun	14	0	78				20	0	66			20	20
5	12:21	sun	16	2	40	20			18	0	42	20		18	18
6	12:29	sun	2	0	47				3	0	52			3	3
7	12:39	sun	0	0	9				0	0	9			0	0
8	12:42	sun	9	1	11				9	1	9			9	10
9	12:50	sun	15	0	21				16	0	29	2		16	16
10	12:55	sun	4	0	12				6	0	12			6	6
11	13:02	sun	4	0	31				5	0	29			5	5
12	13:43	sun	3	0	30				4	0	31			4	4
13	13:50	sun	0	0	14				0	0	17			0	0
14	14:11	sun	22	0	50				25	0	47			25	25
15	14:32	sun	11	0	32	30			12	0	36	30		12	12
16	14:50	shadow	20	0	25	100			20	0	30	100		20	20
Total			368	7	543				409	6	537			409	416
Weather am:	late start due to fog						heavy fog in AM pushed start time back but calm, clear outside fog								
Weather pm:	clear, calm, perfect visibility to Diamond Island, some high cloud d/s of Diamond Island, dark and green d/s of Nautley						clear, calm and warm								
Comments:	algae bloom in Fraser Lake, carcasses (? Non-salmonid) in the Nautley and in Nechako for 10 km d/s of Nautley														

Appendix 2. Annual Nechako River Chinook Aerial Counts, 1995-2003.

Nechako River Chinook Aerial Counts, 1995

Date	Total Live	Fish on Redds
25-Aug-95	84	21
1-Sep-95	604	47
8-Sep-95	973	703
15-Sep-95	1139	834
22-Sep-95	705	701
29-Sep-95	176	175
6-Oct-95	24	24

Nechako River Chinook Aerial Counts, 1996

Date	Total Live	Fish on Redds
21-Aug-96	13	0
28-Aug-96	212	62
4-Sep-96	570	430
11-Sep-96	1473	1342
18-Sep-96	1043	1023
25-Sep-96	278	275
2-Oct-96	45	45
9-Oct-96	0	0

Nechako River Chinook Aerial Counts, 1997

Date	Total Live	Fish on Redds
27-Aug-97	183	0
3-Sep-97	969	575
10-Sep-97	1247	1220
18-Sep-97	1054	1049
23-Sep-97	465	465
1-Oct-97	32	32

Nechako River Chinook Aerial Counts, 1998

Date	Total Live	Fish on Redds
14-Aug-98	0	0
19-Aug-98	13	0
26-Aug-98	224	0
2-Sep-98	477	96
9-Sep-98	1259	1045
15-Sep-98	1048	1044
21-Sep-98	876	838
25-Sep-98	264	263
30-Sep-98	55	55

Nechako River Chinook Aerial Counts, 1999

Date	Total Live	Fish on Redds
26-Aug-99	31	10
1-Sep-99	309	83
7-Sep-99	1046	824
15-Sep-99	1163	1066
21-Sep-99	750	686
29-Sep-99	257	257
5-Oct-99	125	123

Nechako River Chinook Aerial Counts, 2000

Date	Total Live	Fish on Redds
23-Aug-00	530	12
30-Aug-00	1266	83
5-Sep-00	1767	623
13-Sep-00	2789	2466
21-Sep-00	1469	1427
27-Sep-00	461	423
4-Oct-00	63	59

Nechako River Chinook Aerial Counts, 2001

Date	Total Live	Fish on Redds
22-Aug-01	339	4
28-Aug-01	1233	152
5-Sep-01	3113	1116
14-Sep-01	6189	4807
19-Sep-01	3121	2853
26-Sep-01	678	669
3-Oct-01	72	72

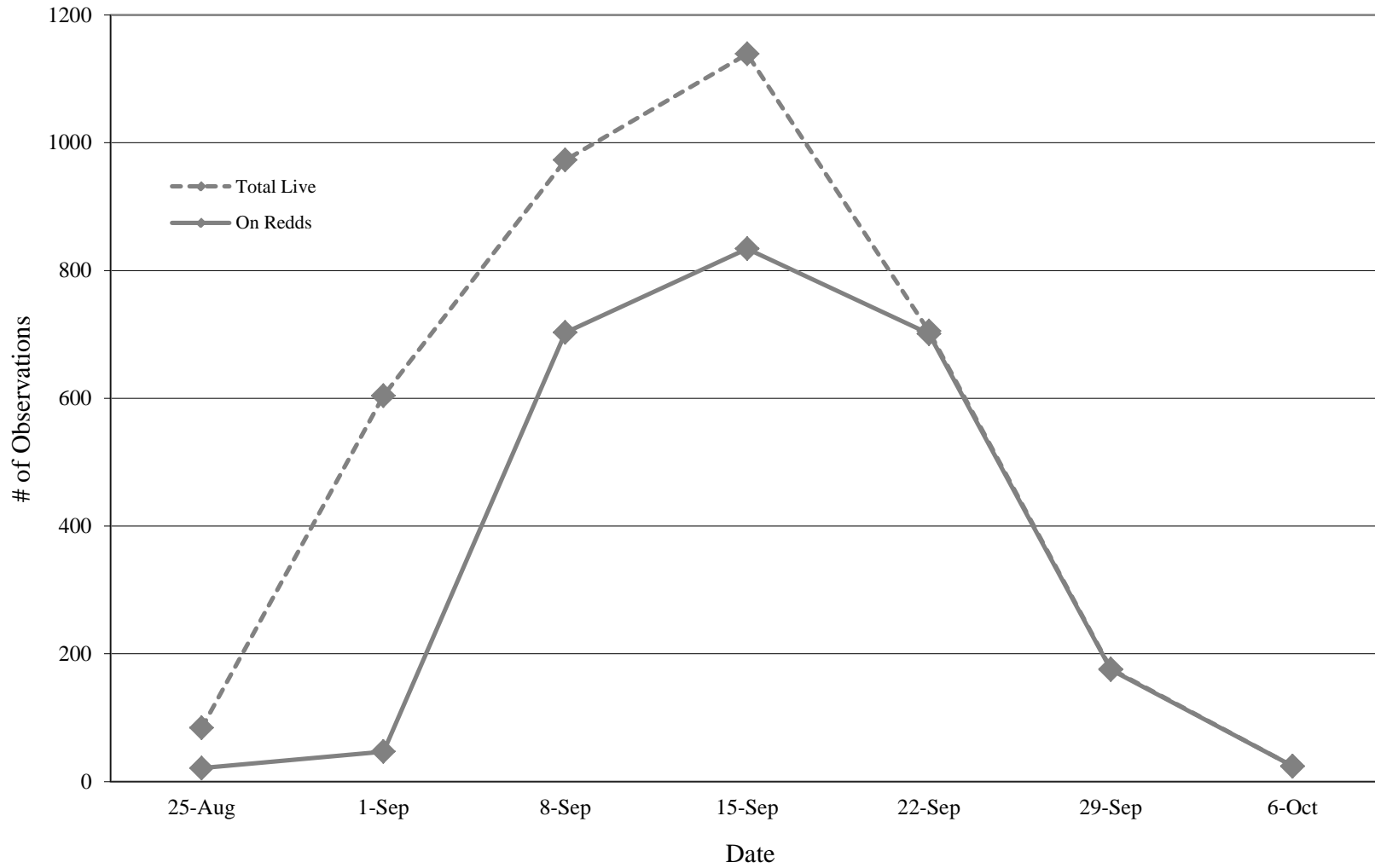
Nechako River Chinook Aerial Counts, 2002

Date	Total Live	Fish on Redds
27-Aug-02	457	10
4-Sep-02	382	98
11-Sep-02	2773	1953
18-Sep-02	2283	1976
24-Sep-02	1325	1312
1-Oct-02	143	143

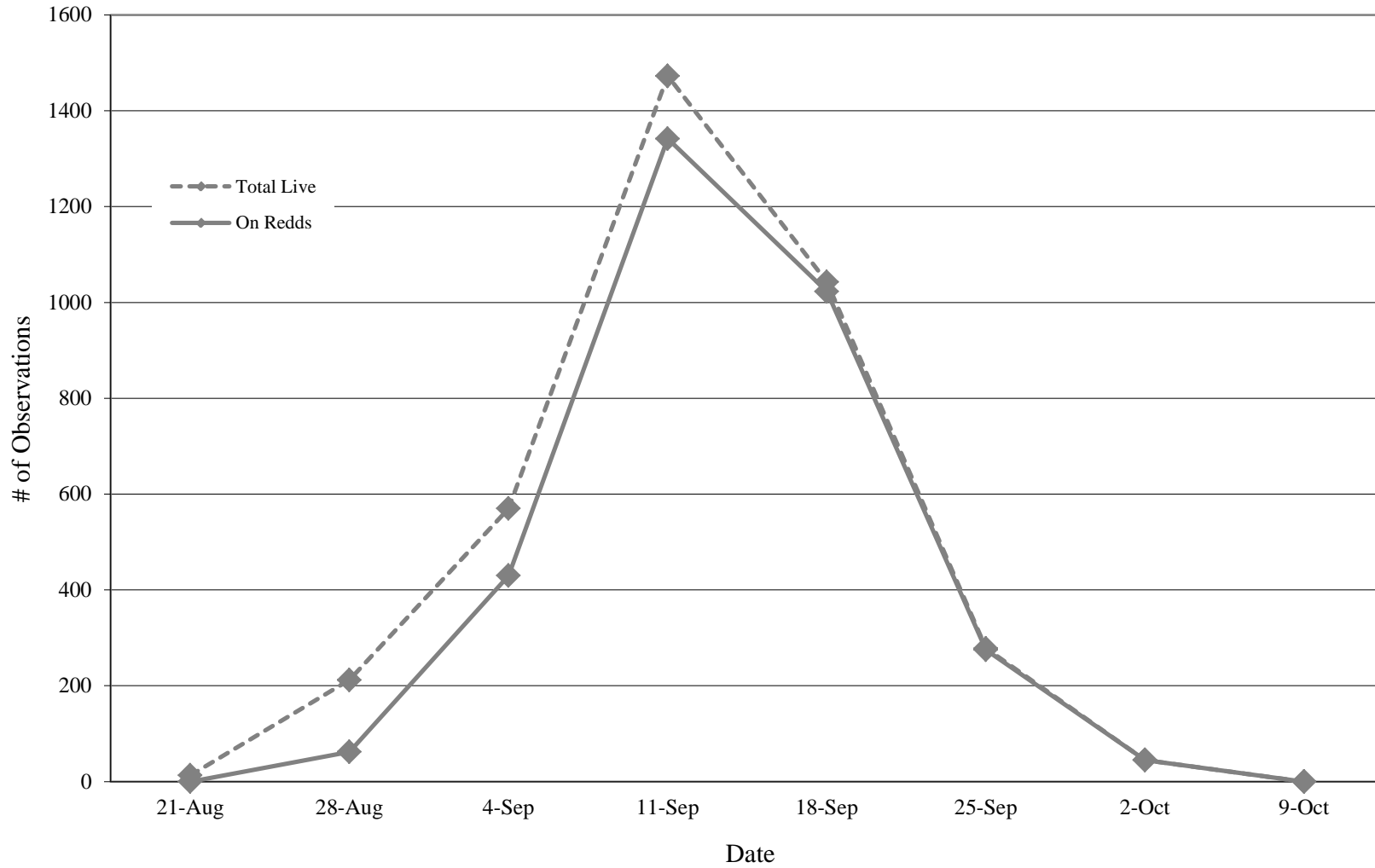
Table 1
Nechako River Chinook Aerial Counts, 2003

Date	Total Live	Fish on Redds
27-Aug-03	752	8
3-Sep-03	2449	501
10-Sep-03	2308	1400
12-Sep-03	2881	1960
17-Sep-03	3254	2954
23-Sep-03	2552	2441
1-Oct-03	416	409

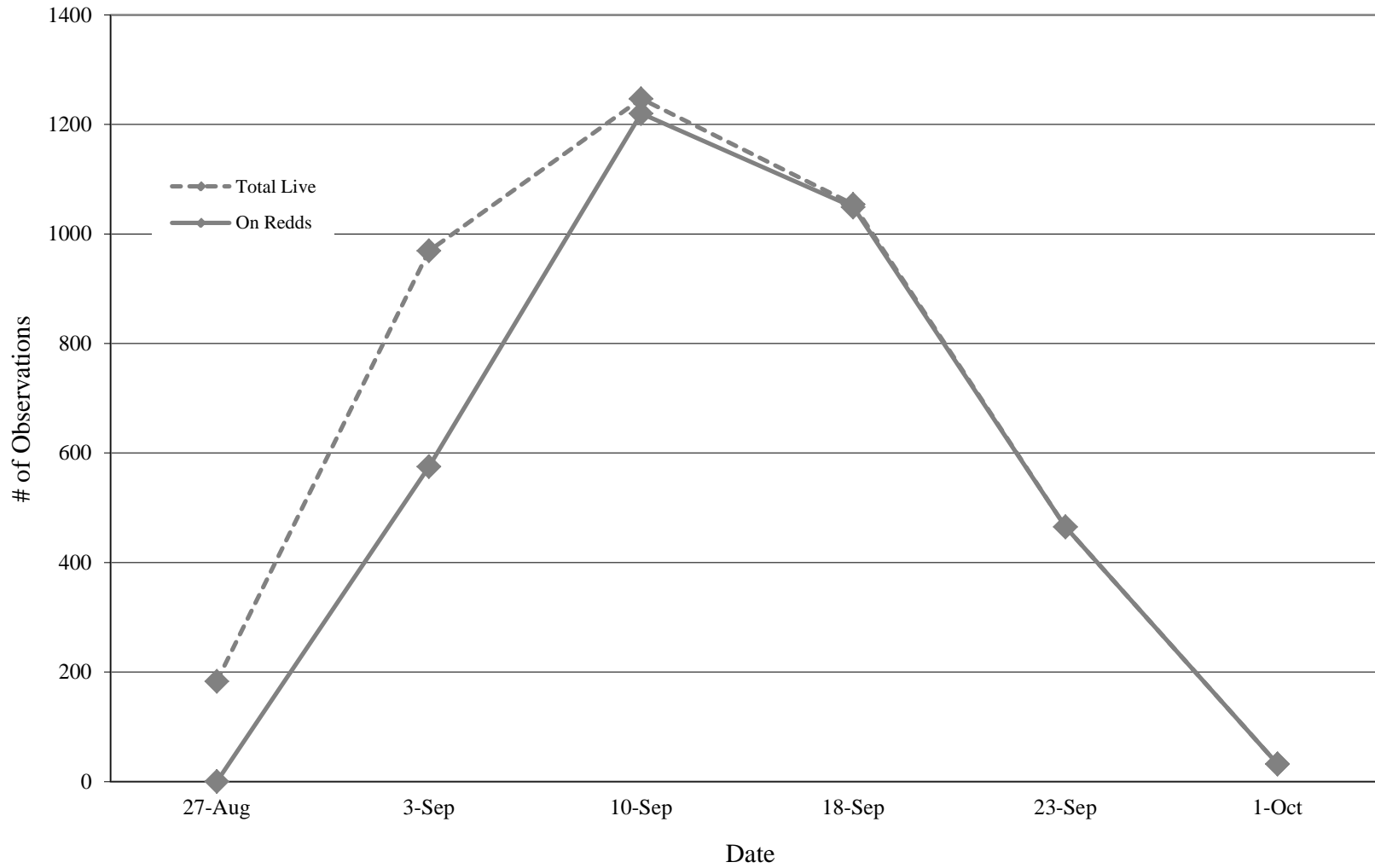
Appendix 2
Nechako River Chinook Aerial Counts, 1995



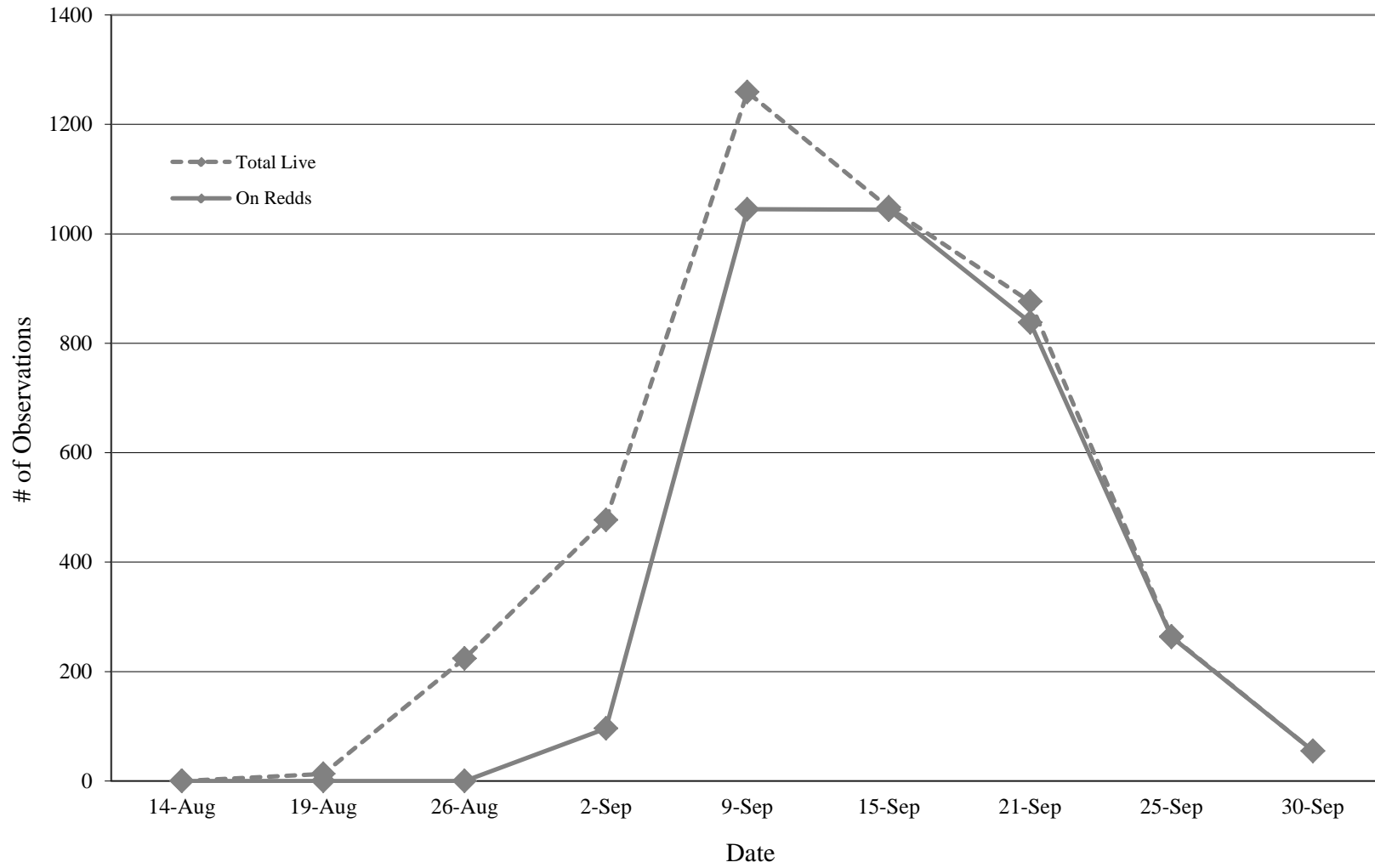
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Nechako River Chinook Aerial Counts, 1996



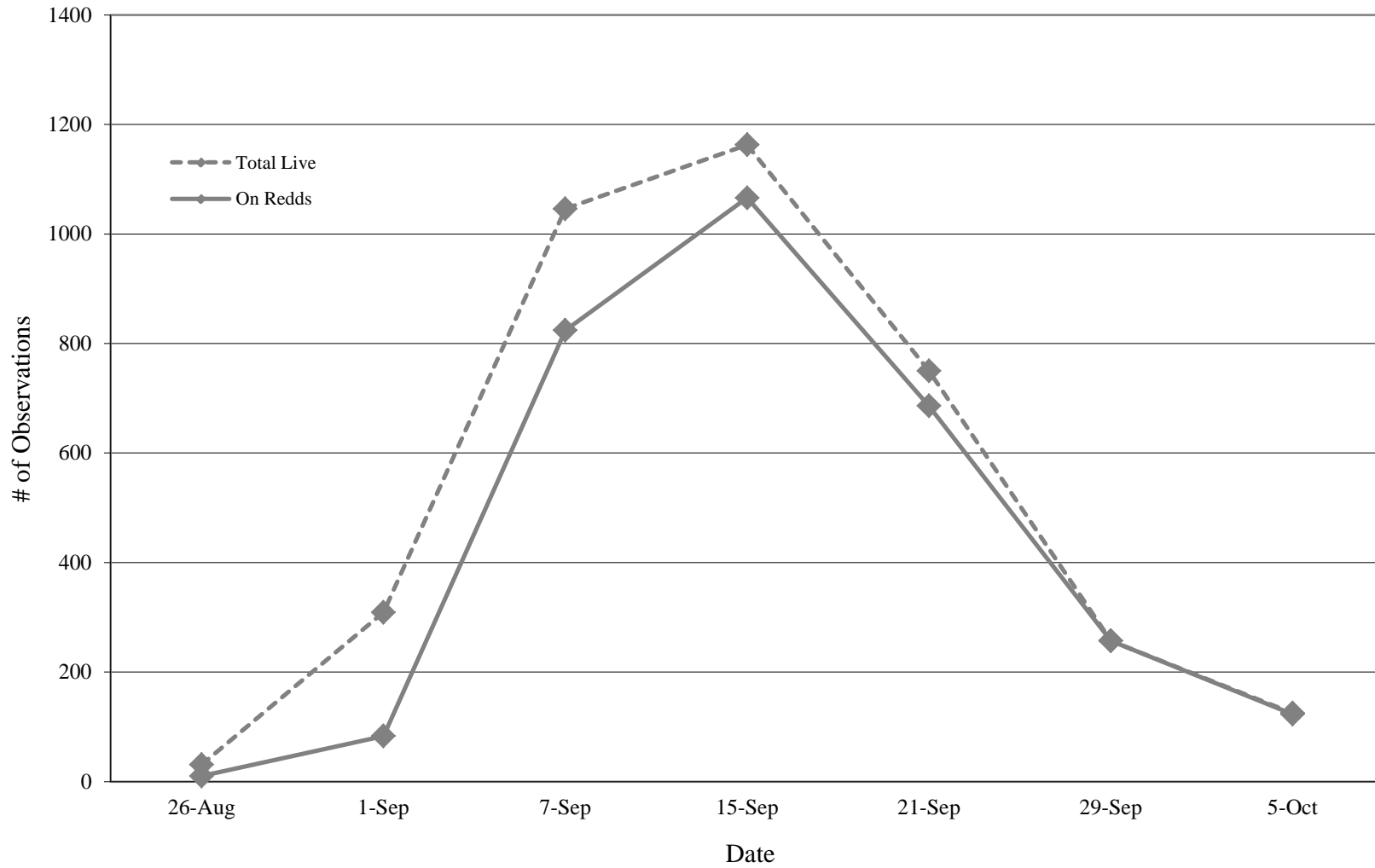
Appendix 2
Nechako River Chinook Aerial Counts, 1997



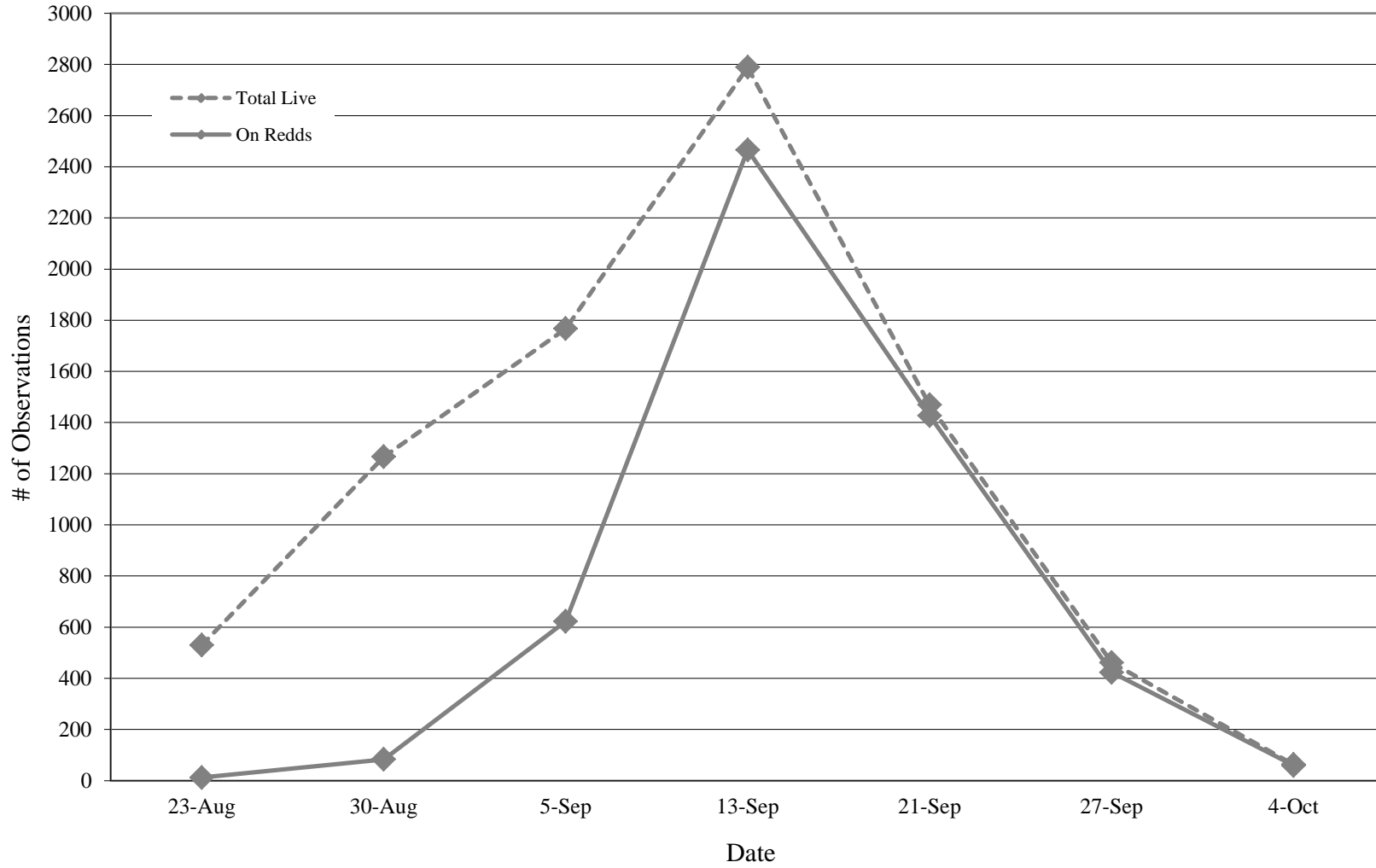
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Nechako River Chinook Aerial Counts, 1998



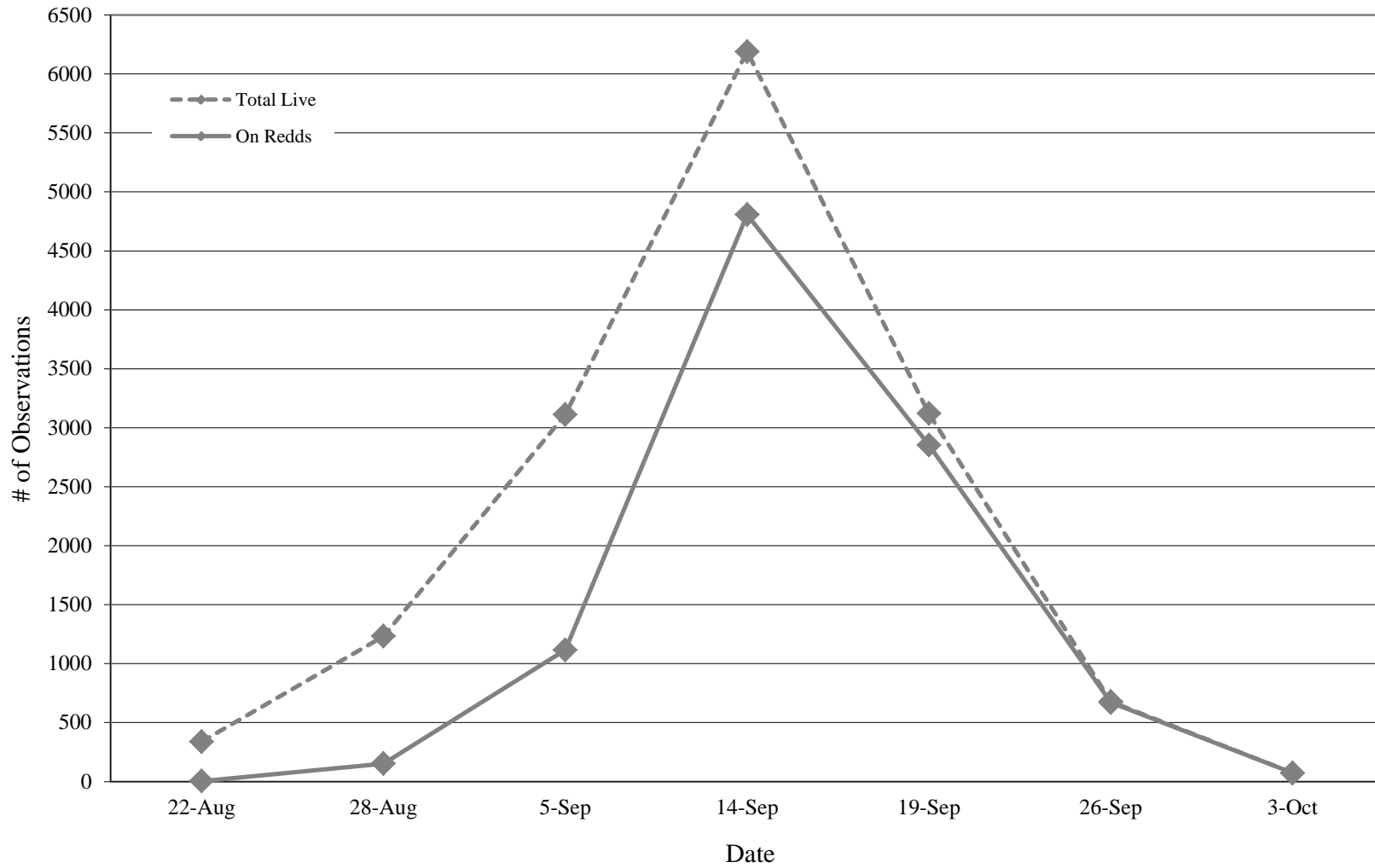
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Nechako River Chinook Aerial Counts, 1999



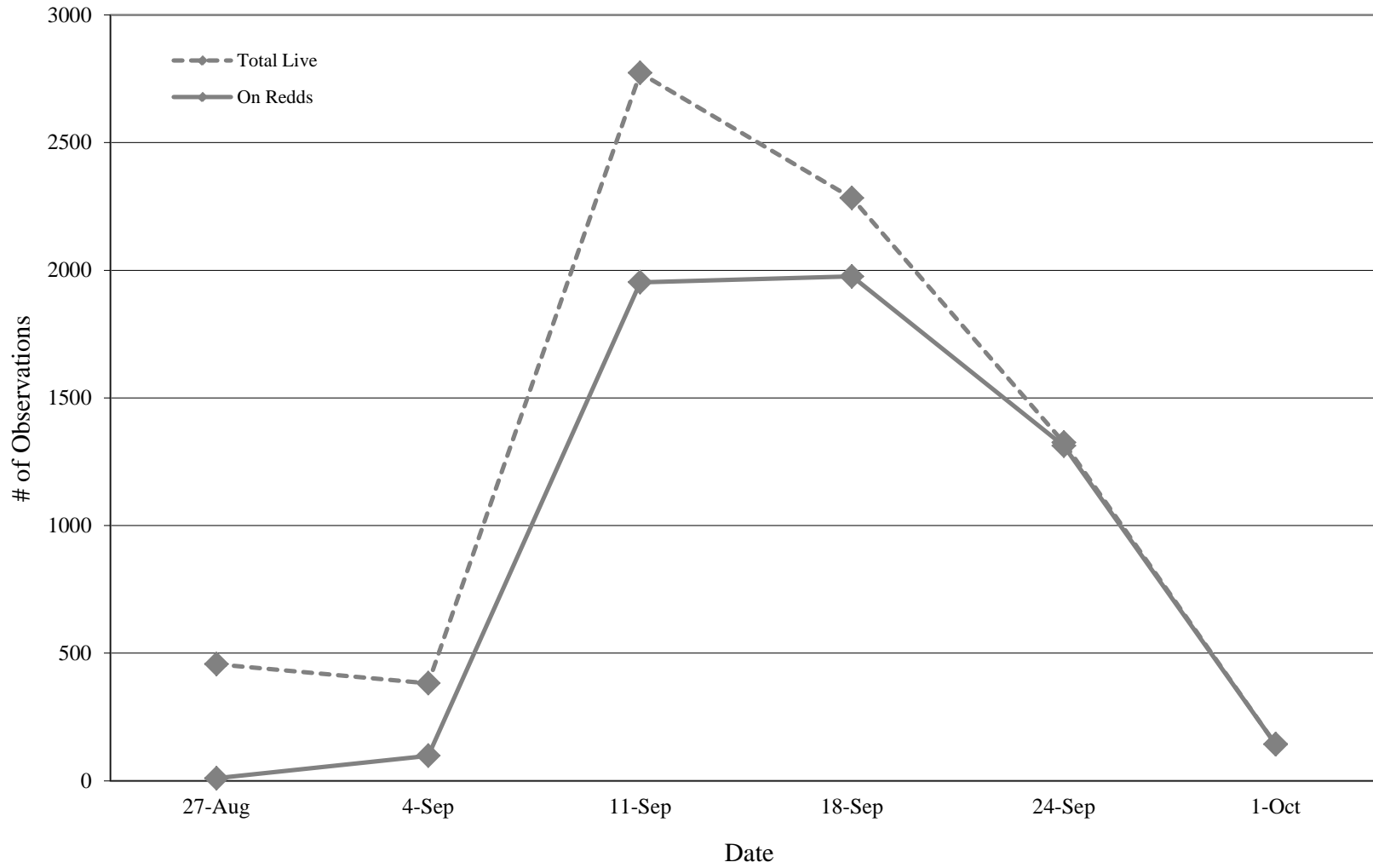
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Nechako River Chinook Aerial Counts, 2000



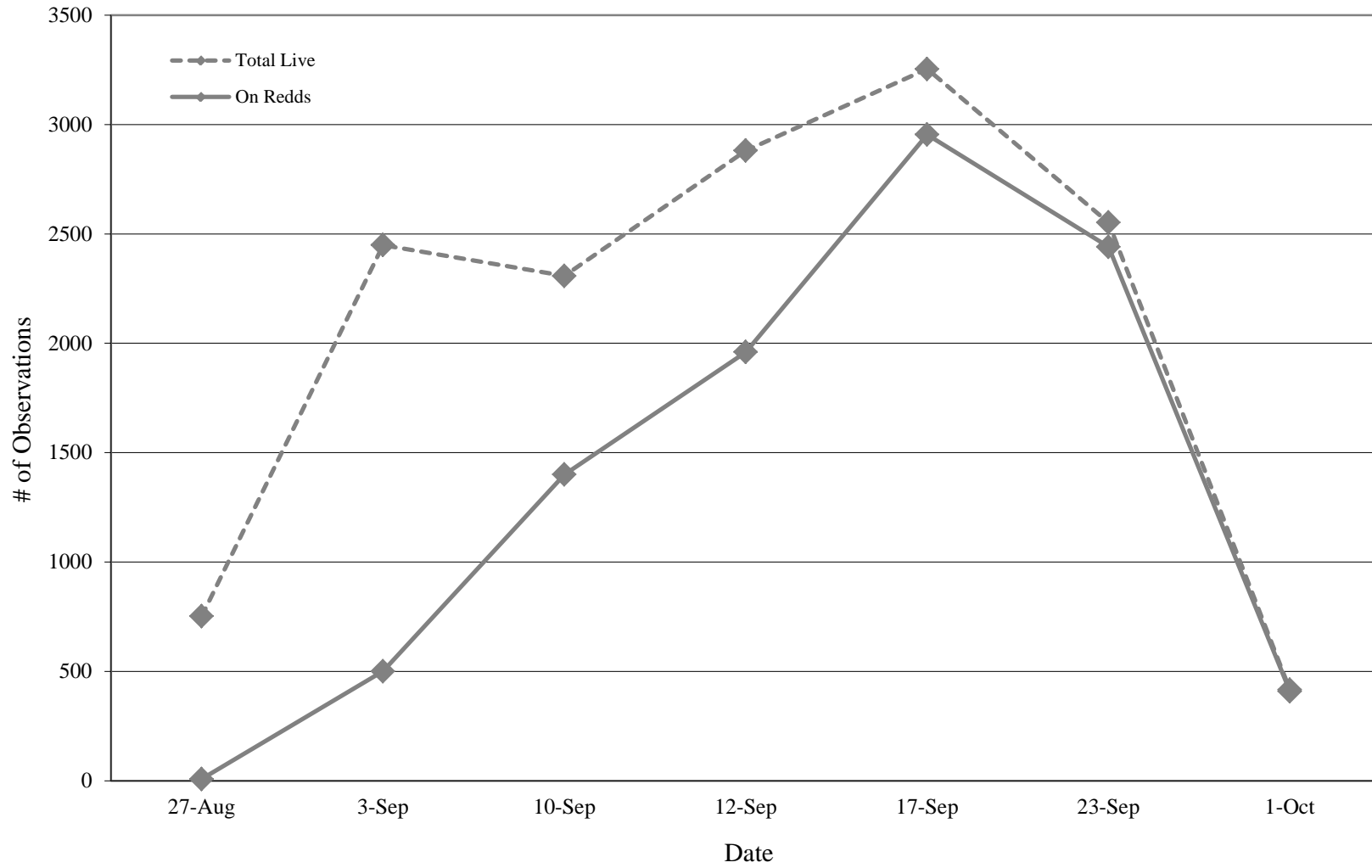
Appendix 2
Nechako River Chinook Aerial Counts, 2001



Appendix 2
Nechako River Chinook Aerial Counts, 2002



Appendix 2
Nechako River Chinook Aerial Counts, 2003



Appendix 3. Annual Nechako River Chinook Spaw

Nechako River Chinook Spawner Distribution by Area, 1995

Date	Upper Area	Middle Area	Lower Area
25-Aug-95	19	2	0
1-Sep-95	11	30	6
8-Sep-95	287	242	174
15-Sep-95	373	257	204
22-Sep-95	345	139	217
29-Sep-95	141	13	21
6-Oct-95	20	2	2
# of Observations	1196	685	624
% Distribution	47.7%	27.3%	24.9%

Nechako River Chinook Spawner Distribution by Area, 1996

Date	Upper Area	Middle Area	Lower Area
21-Aug-96	0	0	0
28-Aug-96	36	18	8
4-Sep-96	210	177	43
11-Sep-96	684	341	317
18-Sep-96	581	238	204
25-Sep-96	190	55	30
2-Oct-96	42	3	0
9-Oct-96	0	0	0
# of Observations	1743	832	602
% Distribution	54.9%	26.2%	18.9%

Nechako River Chinook Spawner Distribution by Area, 1997

Date	Upper Area	Middle Area	Lower Area
27-Aug-97	0	0	0
3-Sep-97	305	228	42
10-Sep-97	718	385	117
18-Sep-97	556	318	175
23-Sep-97	289	86	90
1-Oct-97	30	2	0
# of Observations	1898	1019	424
% Distribution	56.8%	30.5%	12.7%

Nechako River Chinook Spawner Distribution by Area, 1998

Date	Upper Area	Middle Area	Lower Area
14-Aug-98	0	0	0

19-Aug-98	0	0	0
26-Aug-98	0	0	0
2-Sep-98	19	17	60
9-Sep-98	391	403	251
15-Sep-98	475	319	250
21-Sep-98	363	196	279
25-Sep-98	146	60	57
30-Sep-98	38	10	7
# of Observations	1432	1005	904
% Distribution	42.9%	30.1%	27.1%

Nechako River Chinook Spawner Distribution by Area, 1999

Date	Upper Area	Middle Area	Lower Area
26-Aug-99	0	0	0
1-Sep-99	10	0	0
7-Sep-99	356	271	202
15-Sep-99	641	262	167
21-Sep-99	431	132	125
29-Sep-99	220	21	17
5-Oct-99	98	11	15
# of Observations	1756	697	526
% Distribution	58.9%	23.4%	17.7%

ner Counts by Area, 1995-2003.

Nechako River Chinook Spawner Distribution by Area, 2000

Date	Upper Area	Middle Area	Lower Area
23-Aug-00	0	12	0
30-Aug-00	7	0	4
5-Sep-00	228	308	87
13-Sep-00	1375	784	307
21-Sep-00	971	299	157
27-Sep-00	346	53	33
4-Oct-00	52	6	1
# of Observations	2979	1462	589
% Distribution	59.2%	29.1%	11.7%

Nechako River Chinook Spawner Distribution by Area, 2001

Date	Upper Area	Middle Area	Lower Area
22-Aug-01	1	3	0
28-Aug-01	43	76	33
5-Sep-01	434	516	166
14-Sep-01	2604	1351	852
19-Sep-01	1823	618	412
26-Sep-01	578	71	20
3-Oct-01	70	1	1
# of Observations	5553	2636	1484
% Distribution	57.4%	27.3%	15.3%

Nechako River Chinook Spawner Distribution by Area, 2002

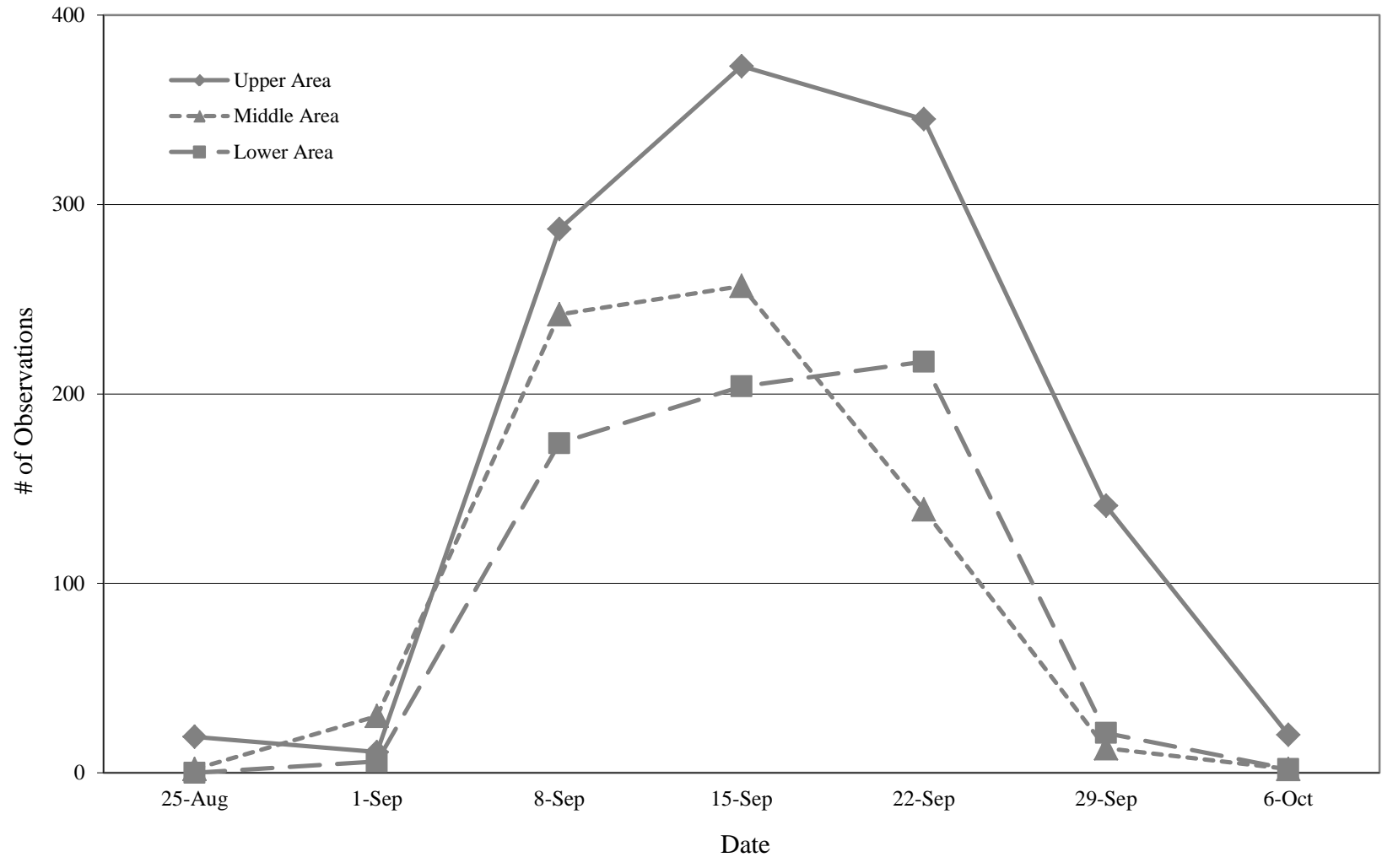
Date	Upper Area	Middle Area	Lower Area
27-Aug-02	10	0	0
4-Sep-02	56	35	6
11-Sep-02	1047	622	284
18-Sep-02	1088	526	362
24-Sep-02	889	214	209
1-Oct-02	133	4	6
# of Observations	3223	1401	867
% Distribution	58.7%	25.5%	15.8%

Nechako River Chinook Spawner Distribution by Area, 2003

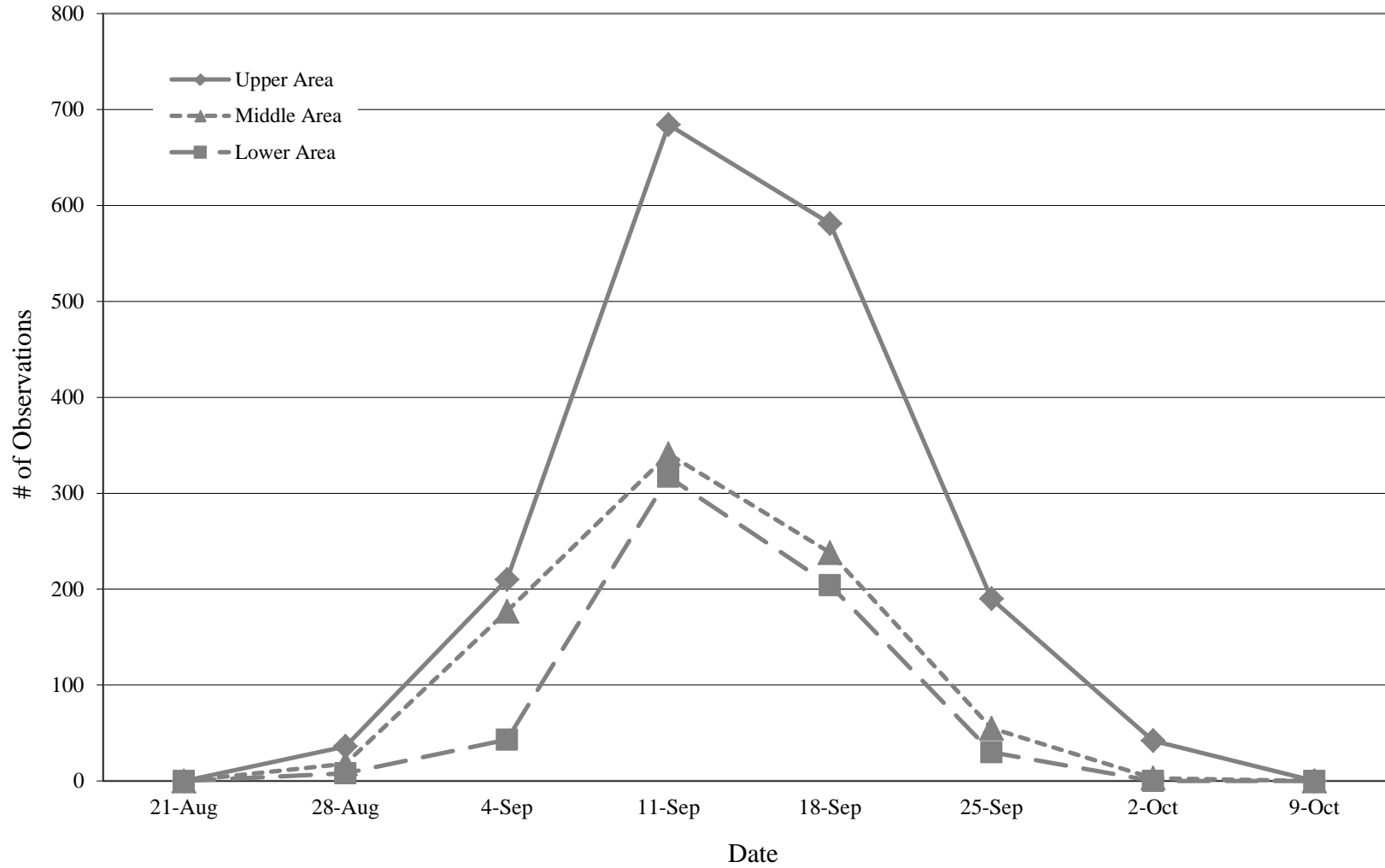
Date	Upper Area	Middle Area	Lower Area
27-Aug-03	2	6	0

3-Sep-03	293	123	85
10-Sep-03	654	557	189
12-Sep-03	720	720	520
17-Sep-03	1364	790	800
23-Sep-03	1149	543	749
1-Oct-03	312	40	57
# of Observations	4494	2779	2400
% Distribution	46.5%	28.7%	24.8%

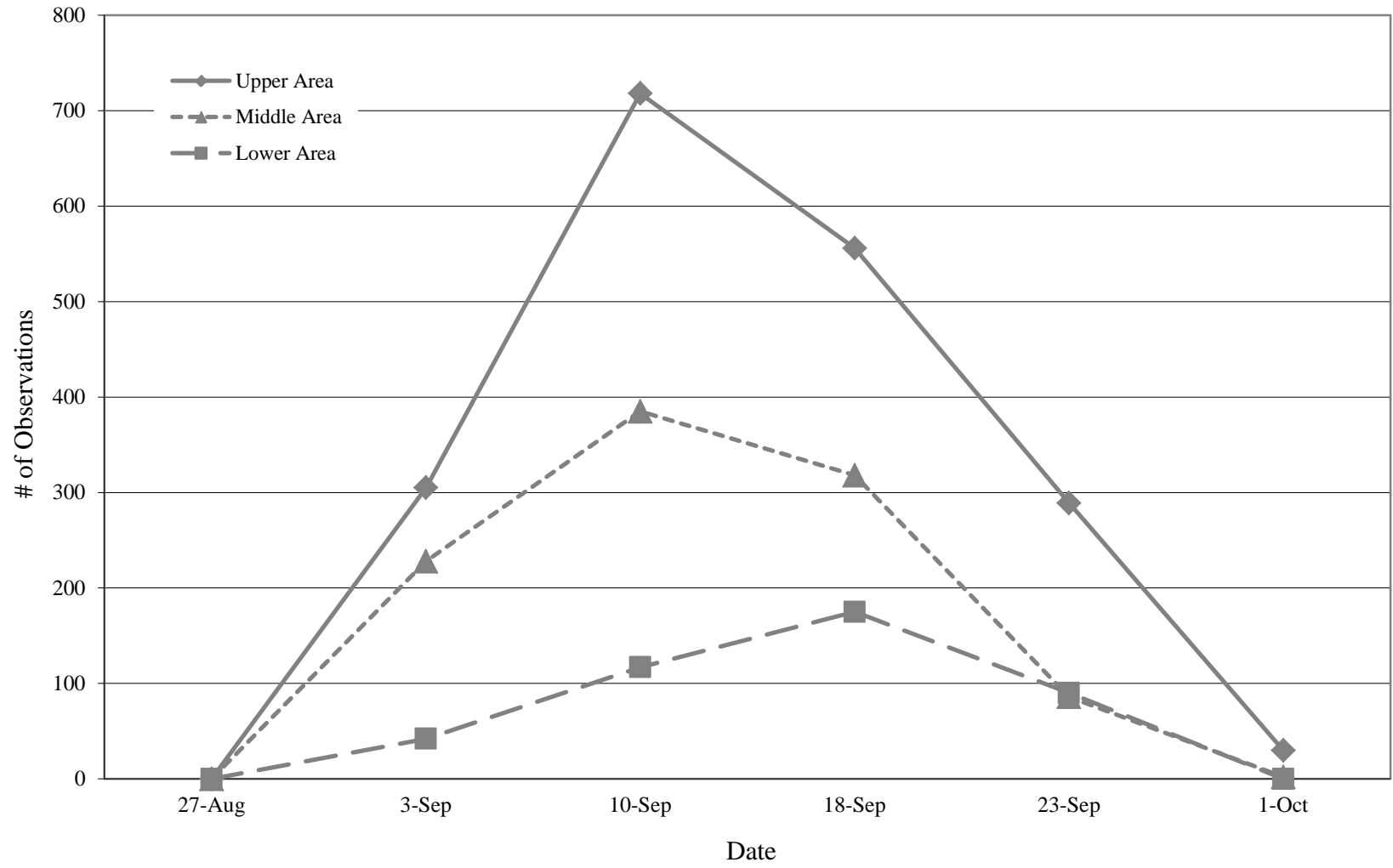
Appendix 3
Nechako River Chinook Spawner Counts by Area, 1995



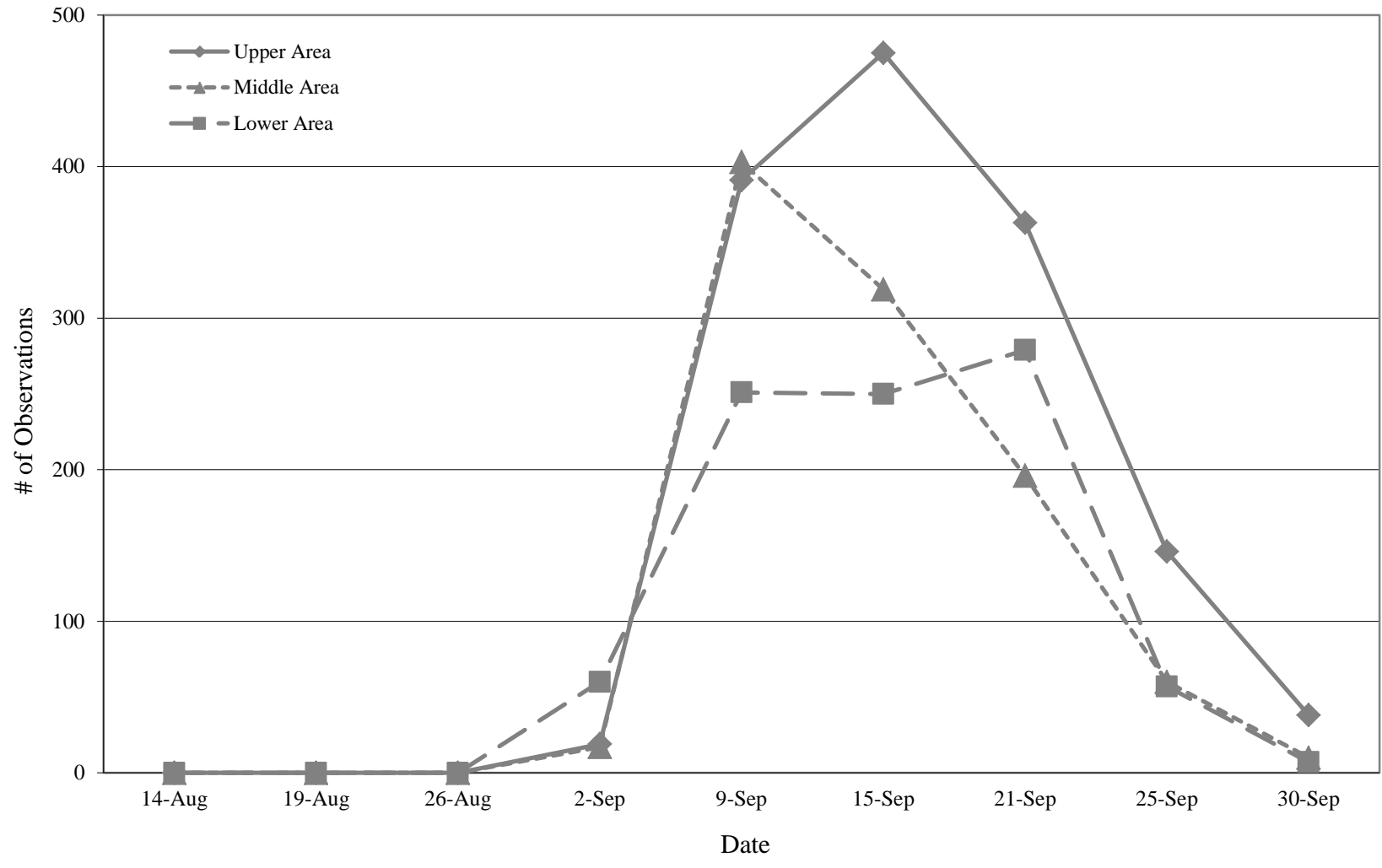
Appendix 3
Nechako River Chinook Spawner Counts by Area, 1996



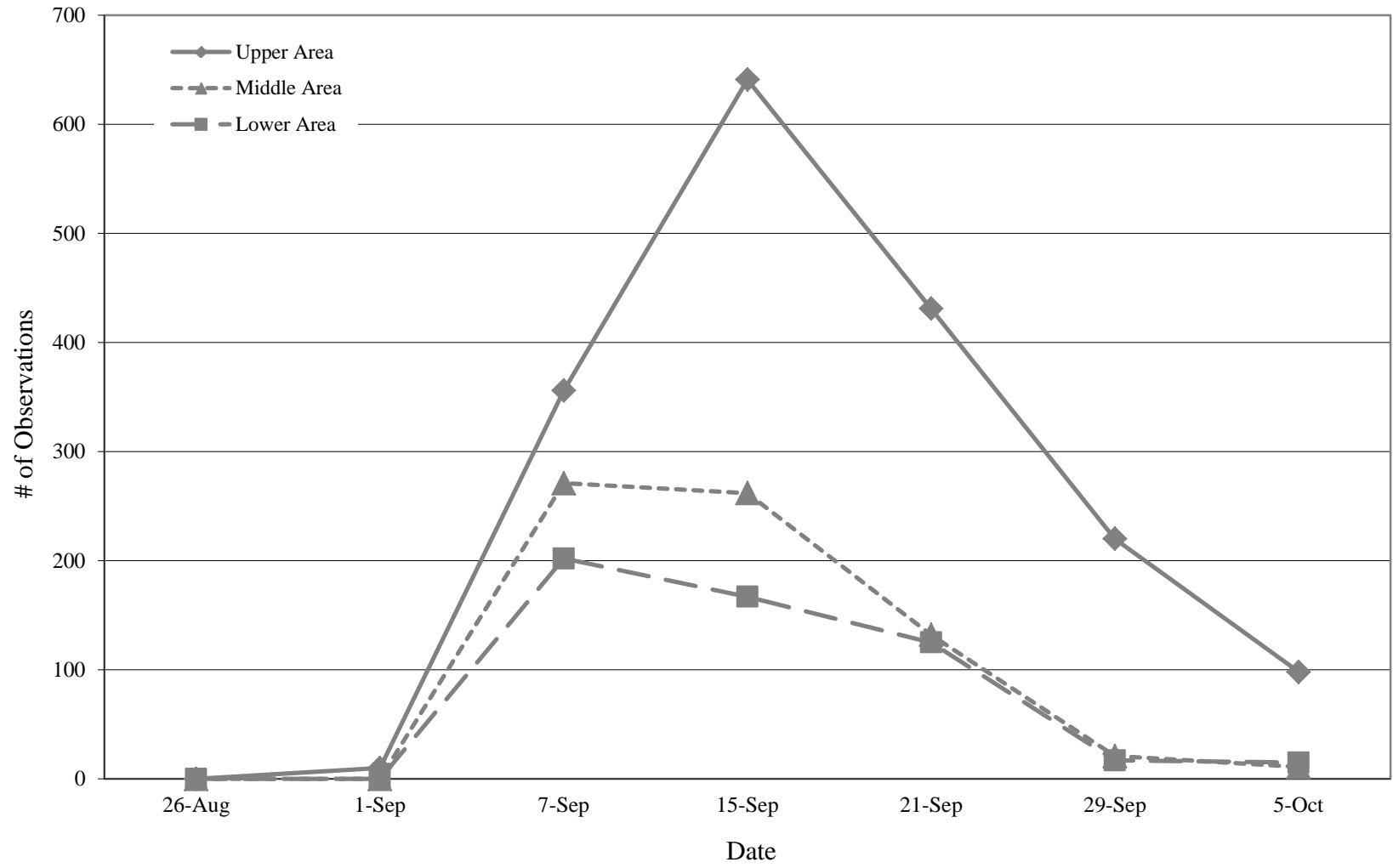
Appendix 3
Nechako River Chinook Spawner Counts by Area, 1997



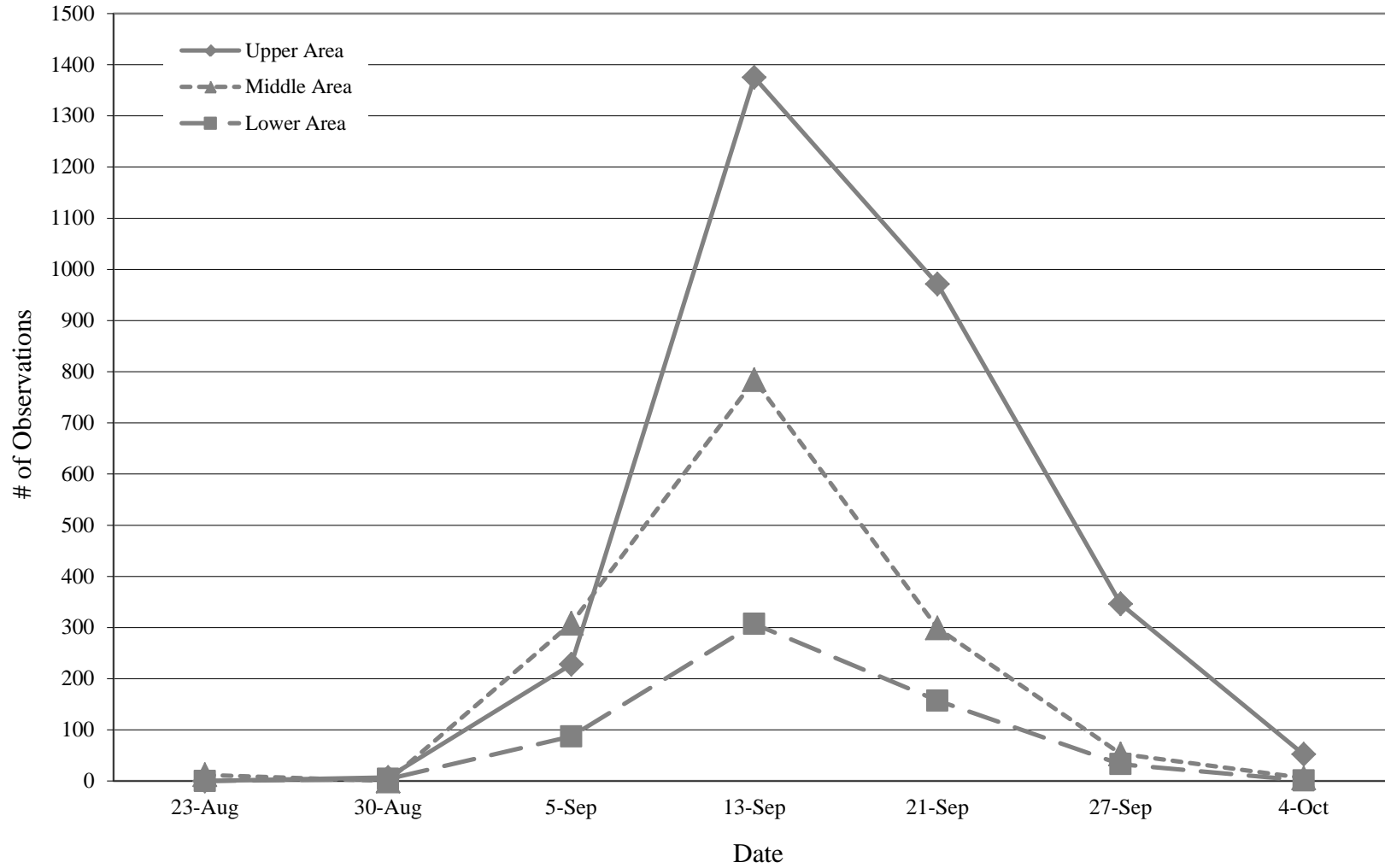
Appendix 3
Nechako River Chinook Spawner Counts by Area, 1998



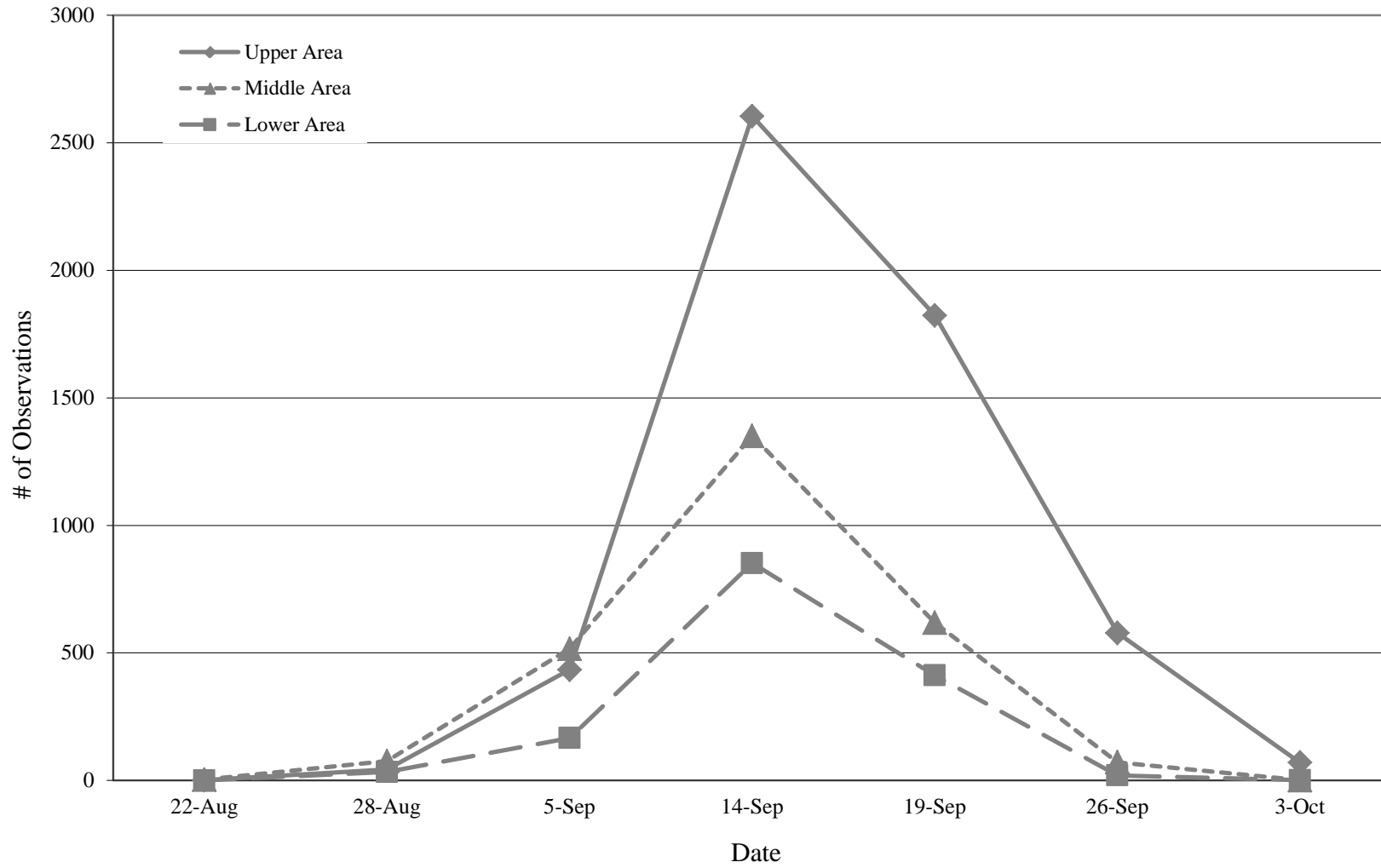
Appendix 3
Nechako River Chinook Spawner Counts by Area, 1999



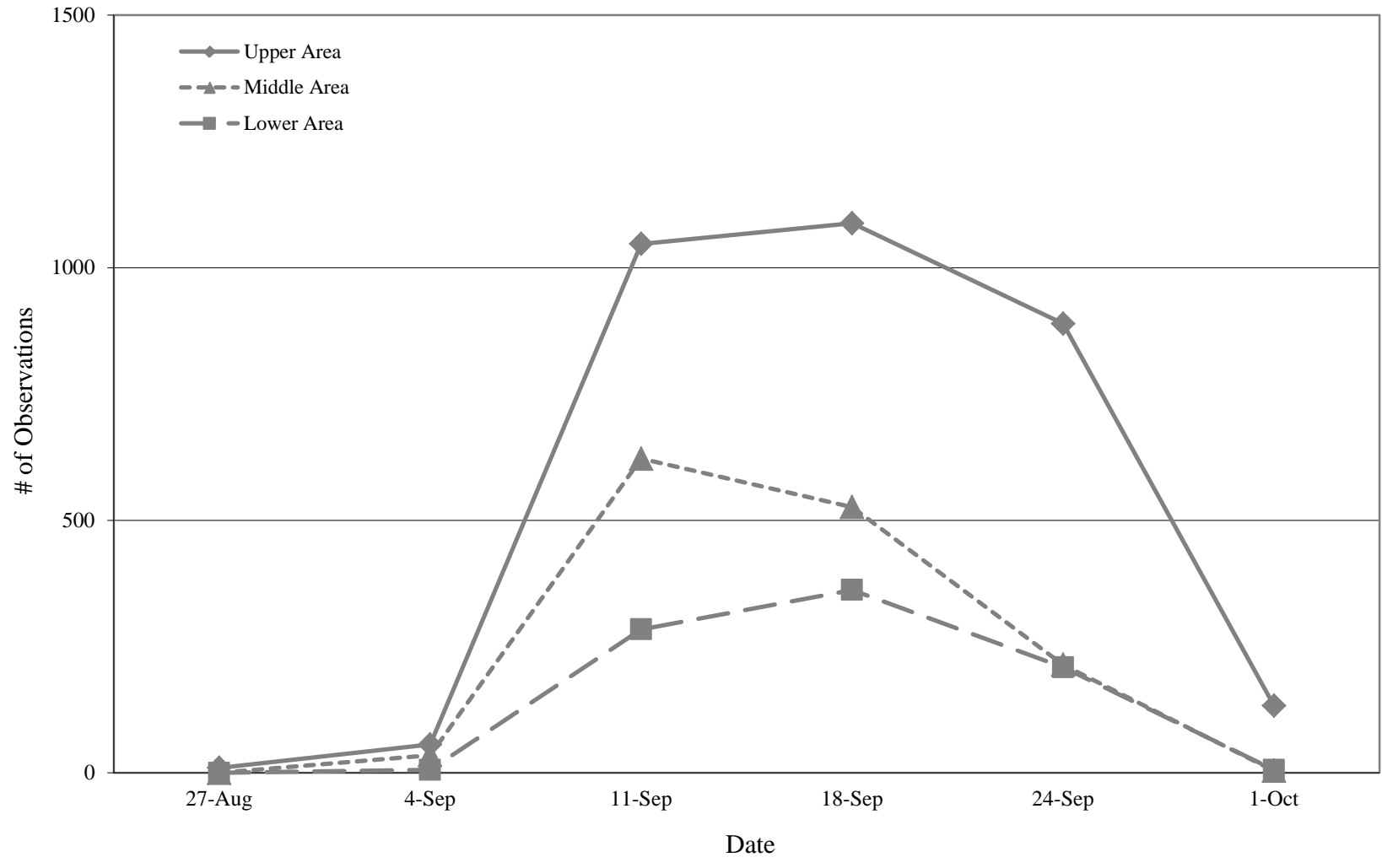
Appendix 3
Nechako River Chinook Spawner Counts by Area, 2000



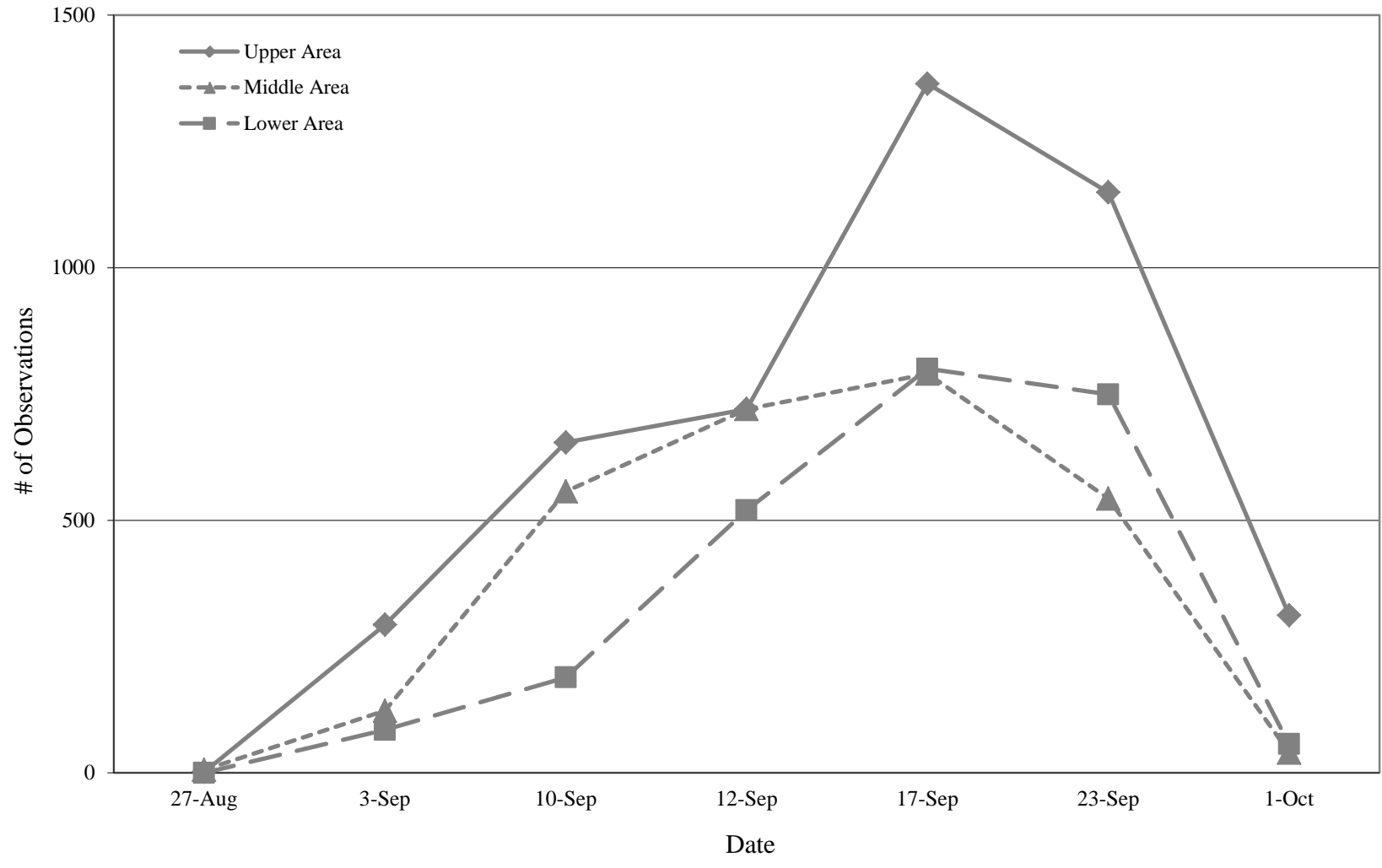
Appendix 3
Nechako River Chinook Spawner Counts by Area, 2001



Appendix 3
Nechako River Chinook Spawner Counts by Area, 2002



Appendix 3
Nechako River Chinook Spawner Counts by Area, 2003



Appendix 4. Annual Nechako River Chinook Residence Time Calculations, 1995-2003.

Nechako River Chinook Residence Time, 1995

	Upper Sites	Middle Sites	Lower Sites	All fish
Mean	10.3	10	10.8	10.4
St. Dev.	3.3	5.7	3.0	3.2
Min	4	6	6	4
Max	18	14	15	18
N	45	2	11	58
95% CI	0.96	7.84	1.75	0.83

Nechako River Chinook Residence Time, 2000

	Upper Sites	Middle Sites	Lower Sites	All fish
Mean	10.6	12.8	12.4	11
St. Dev.	4.5	2.7	2.7	4.5
Min	4	7	6	4
Max	23	19	19	23
N	141	23	36	177
95% CI	0.8	1.09	0.87	0.67

Nechako River Chinook Residence Time, 1996

	Upper Sites	Middle Sites	Lower Sites	All fish
Mean	11.1	10.7	10.6	10.9
St. Dev.	2.8	2.7	2.9	2.8
Min	5	7	5	5
Max	18	15	15	18
N	43	3	19	62
95% CI	0.81	4.57	1.3	0.69

Nechako River Chinook Residence Time, 2001

	Upper Sites	Middle Sites	Lower Sites	All fish
Mean	11.5	10.8	11.4	11
St. Dev.	2.6	3.1	3.1	4.5
Min	3	4	4	4
Max	17	15	17	23
N	211	41	54	177
95% CI	0.34	0.96	0.84	0.67

Nechako River Chinook Residence Time, 1997

	Upper Sites	Middle Sites	Lower Sites	All fish
Mean		11.8	11.9	11.9
St. Dev.		3.5	4.1	4.1
Min		8	5	5
Max		17	18	18
N		6	10	10
95% CI		2.84	2.55	2.55

Nechako River Chinook Residence Time, 2002

	Upper Sites	Middle Sites	Lower Sites	All fish
Mean	11.2	11.3	11.6	11.2
St. Dev.	2.6	2.6	2.4	2.6
Min	4	5	5	4
Max	17	16	16	17
N	108	20	29	137
95% CI	0.49	1.18	0.86	0.43

Nechako River Chinook Residence Time, 1998

	Upper Sites	Middle Sites	Lower Sites	All fish
Mean	9.6	12	12.2	10.5
St. Dev.	3.1	4.4	3.4	3.4
Min	4	8	8	4
Max	17	21	21	21
N	40	7	21	61
95% CI	0.97	3.26	1.45	0.86

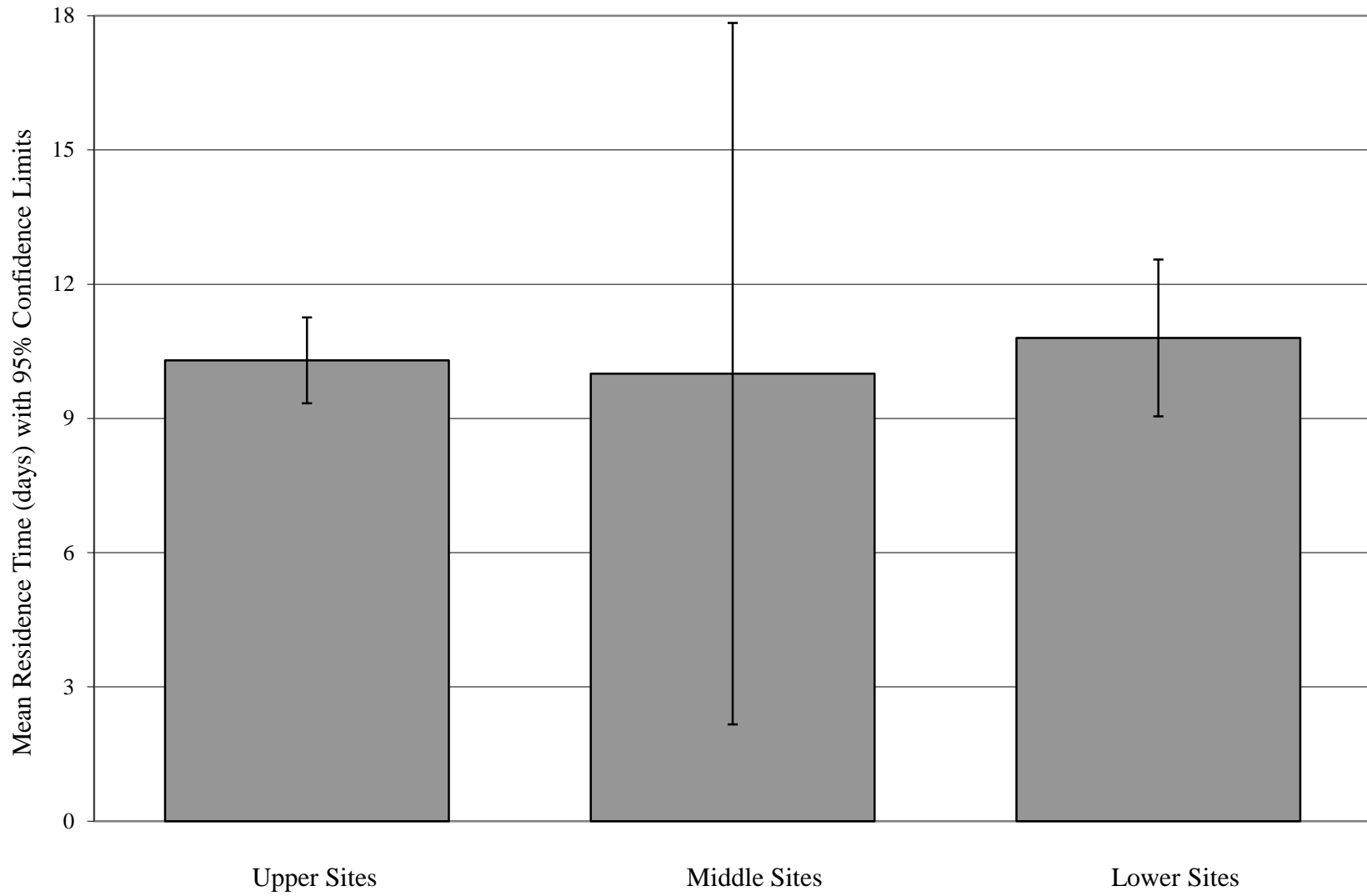
Nechako River Chinook Residence Time, 2003

	Upper Sites	Middle Sites	Lower Sites	All fish
Mean	10.4			10.4
St. Dev.	2.9			2.9
Min	3	Not Sampled	Not Sampled	3
Max	18			18
N	175			175
95% CI	0.43			0.43

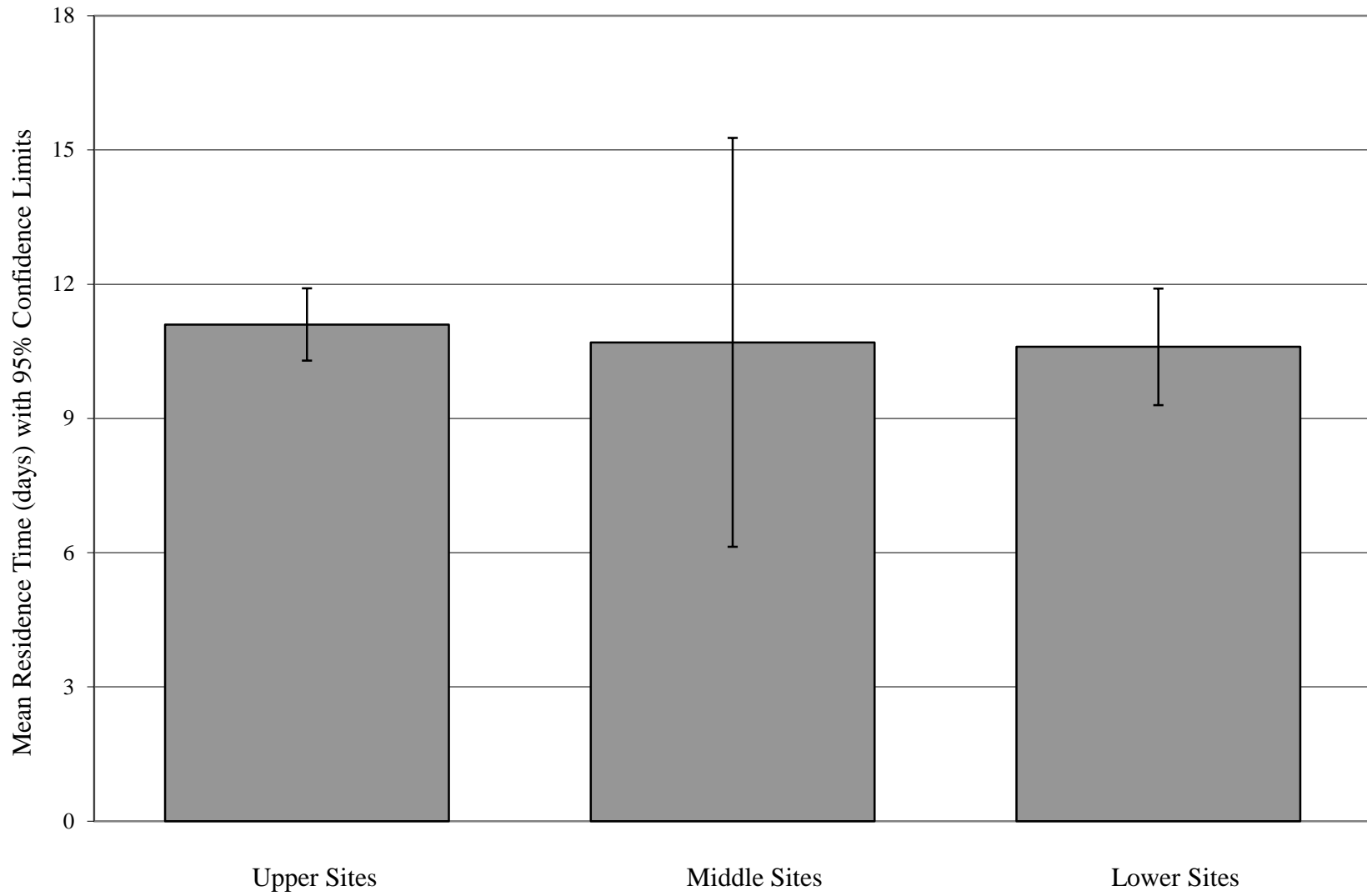
Nechako River Chinook Residence Time, 1999

	Upper Sites	Middle Sites	Lower Sites	All fish
Mean	10.5	12.9	12.8	11.1
St. Dev.	3.2	2.9	2.9	3.3
Min	3	5	5	3
Max	20	16	16	20
N	89	16	28	117
95% CI	0.67	1.44	1.09	0.6

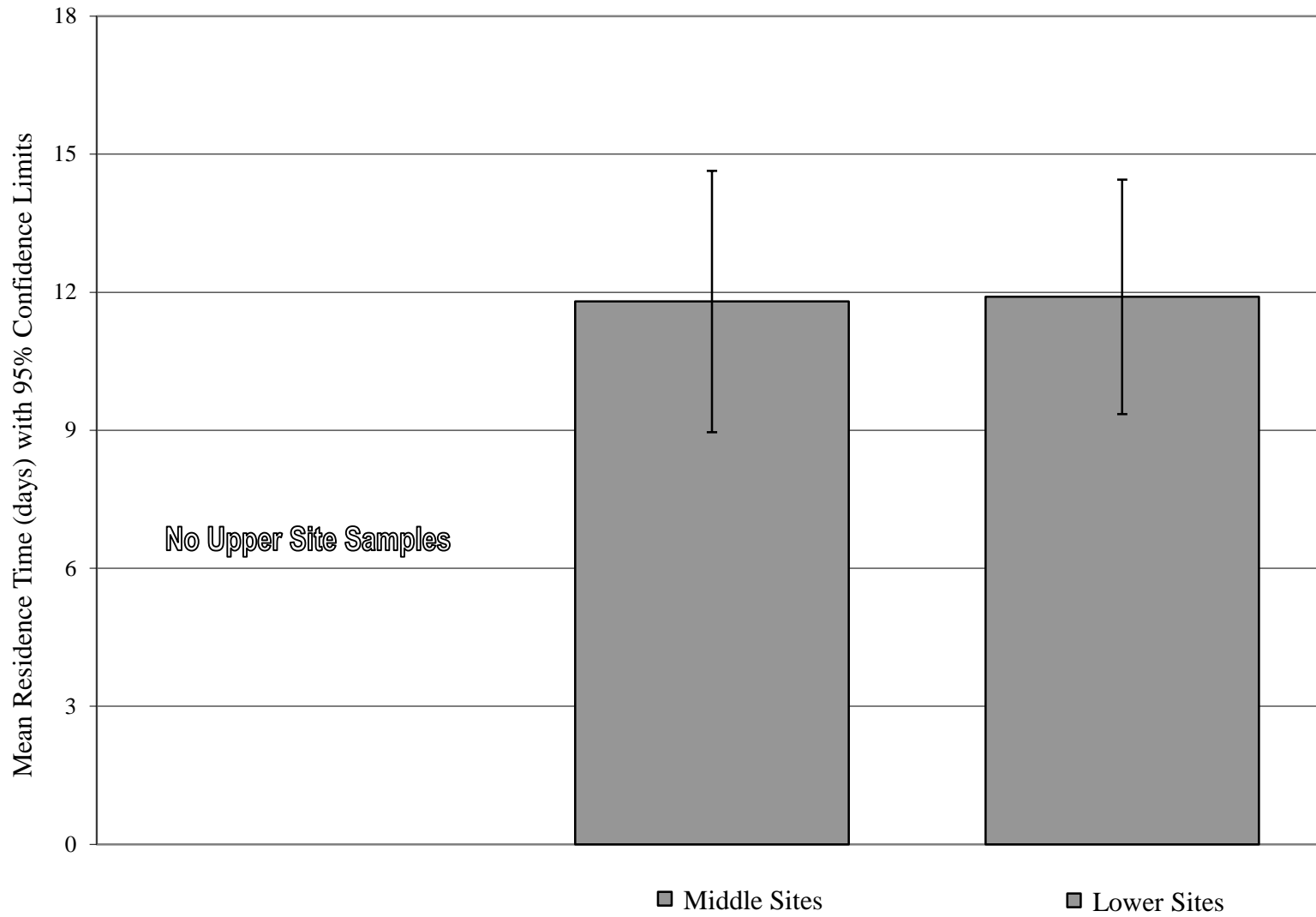
Appendix 4
Nechako River Chinook Mean Residence Time by Site, 1995



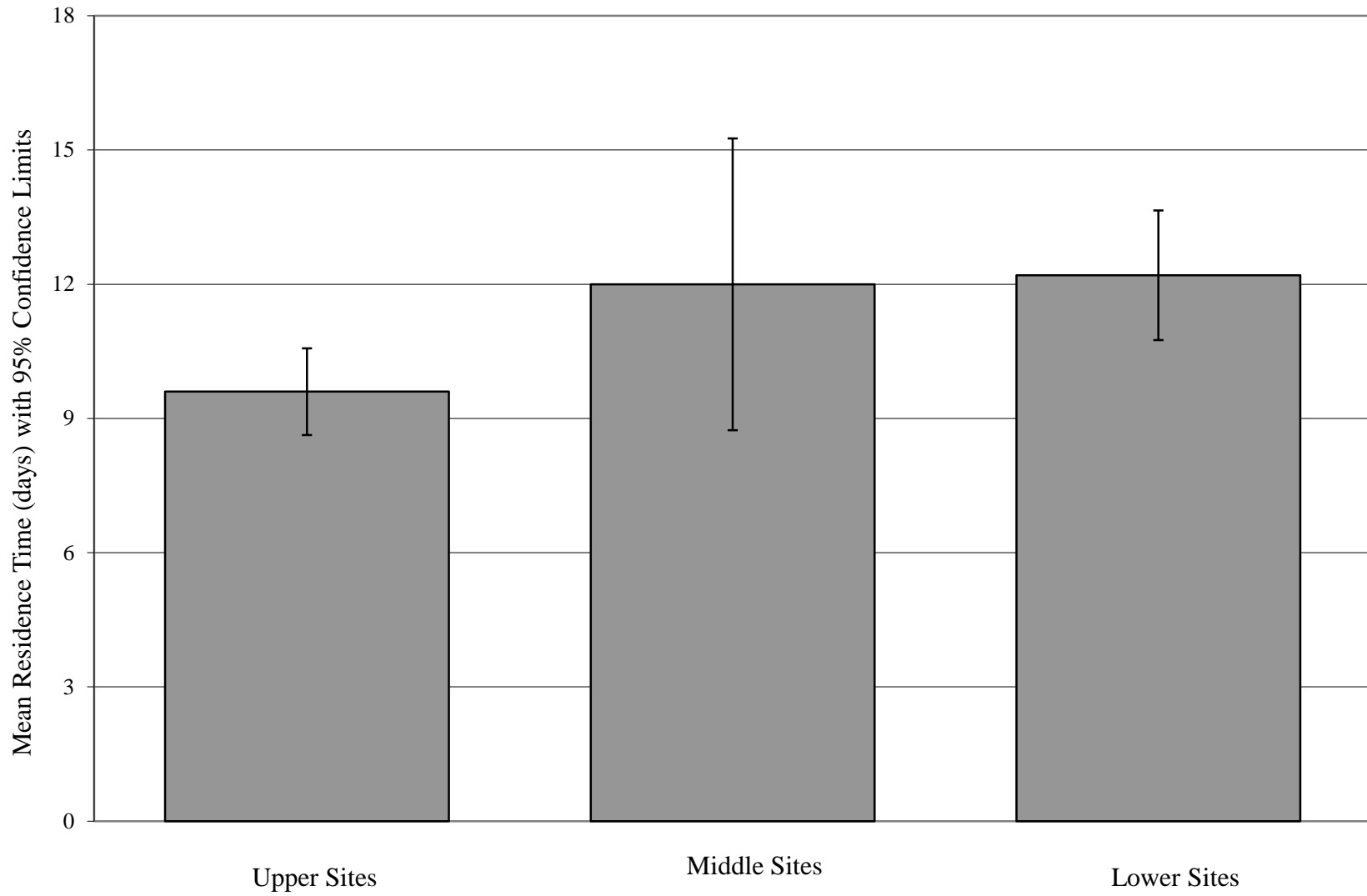
Appendix 4
Nechako River Chinook Mean Residence Time by Site, 1996



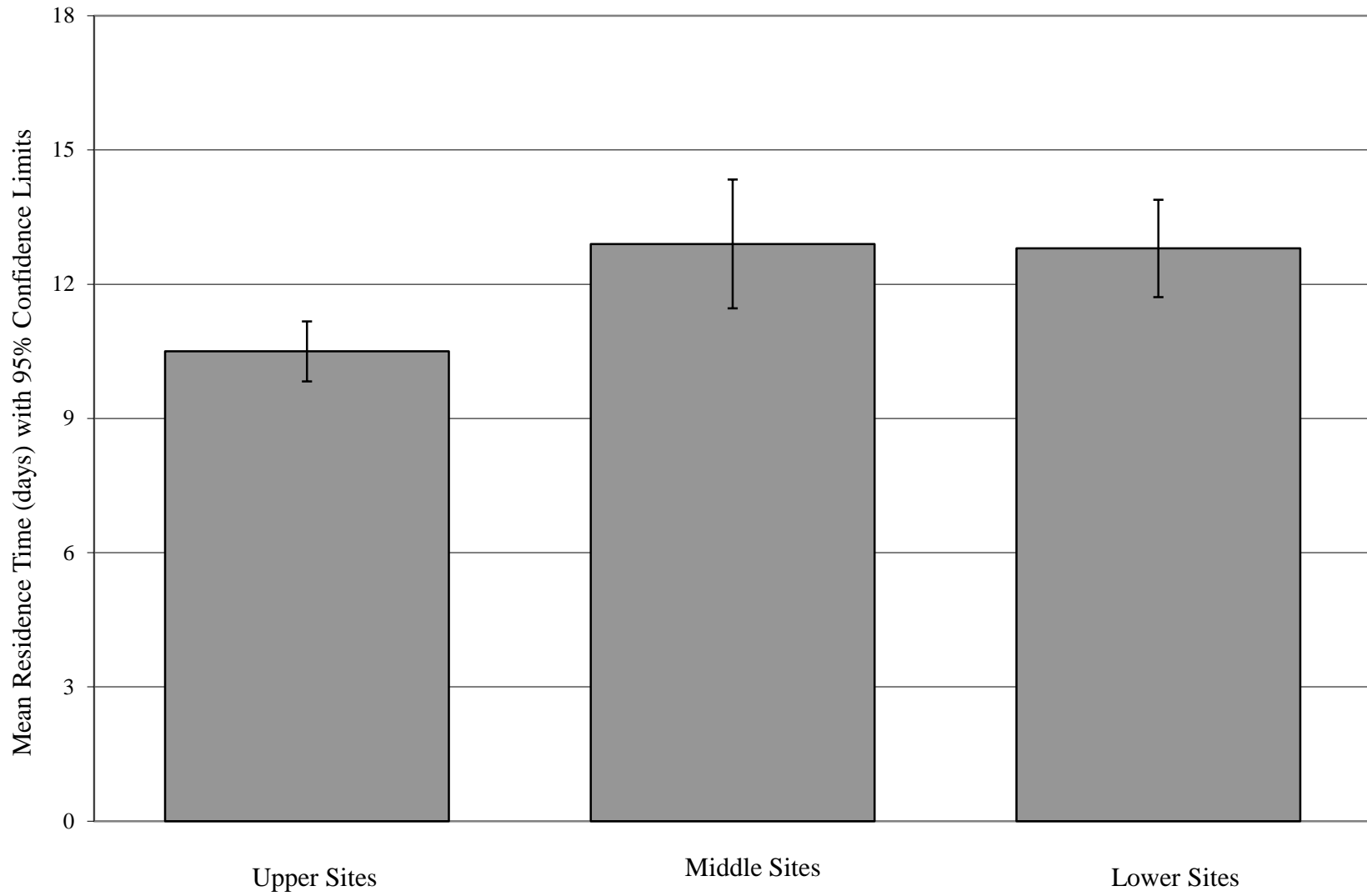
Appendix 4
Nechako River Chinook Mean Residence Time by Site, 1997



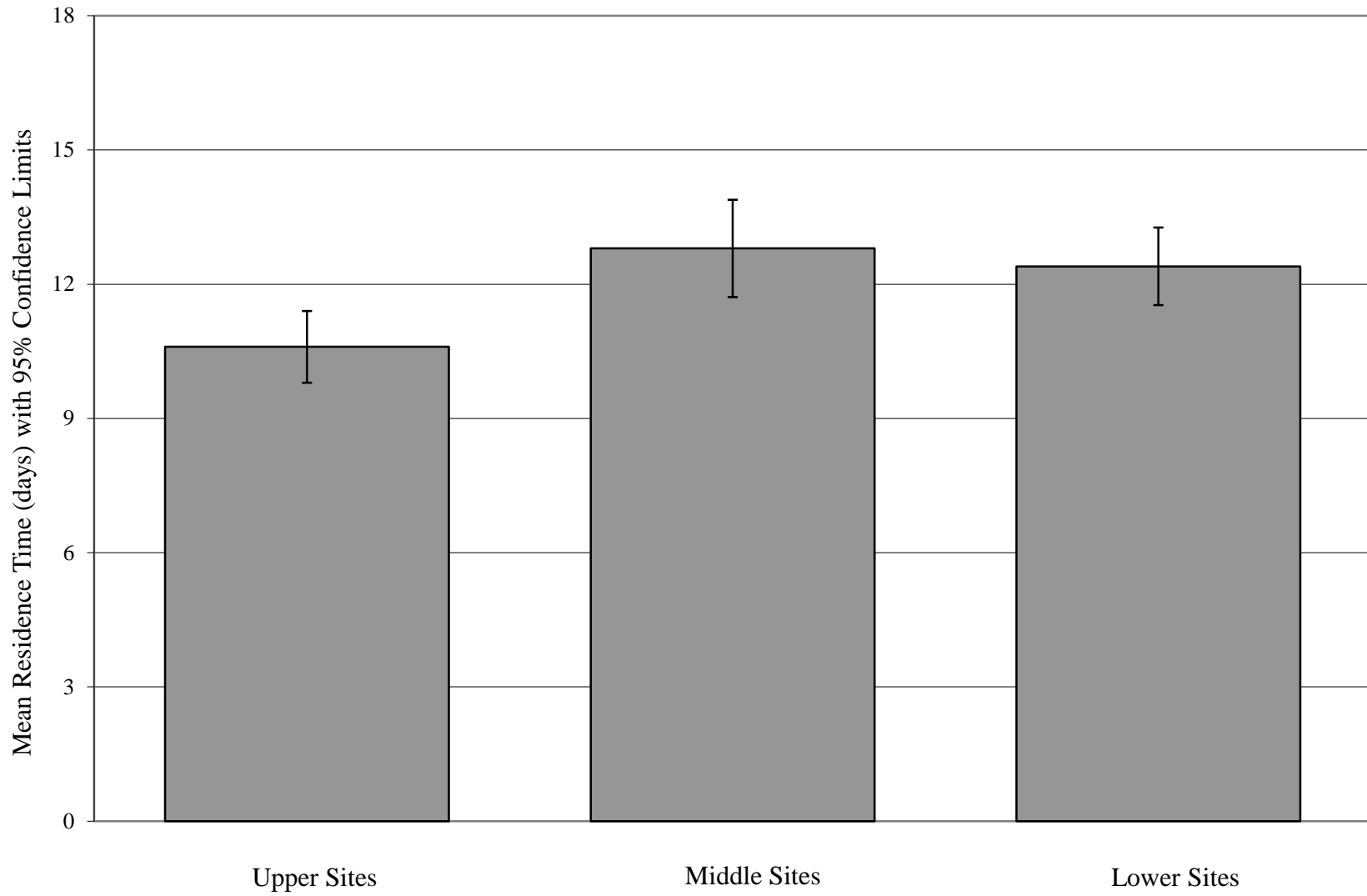
Appendix 4
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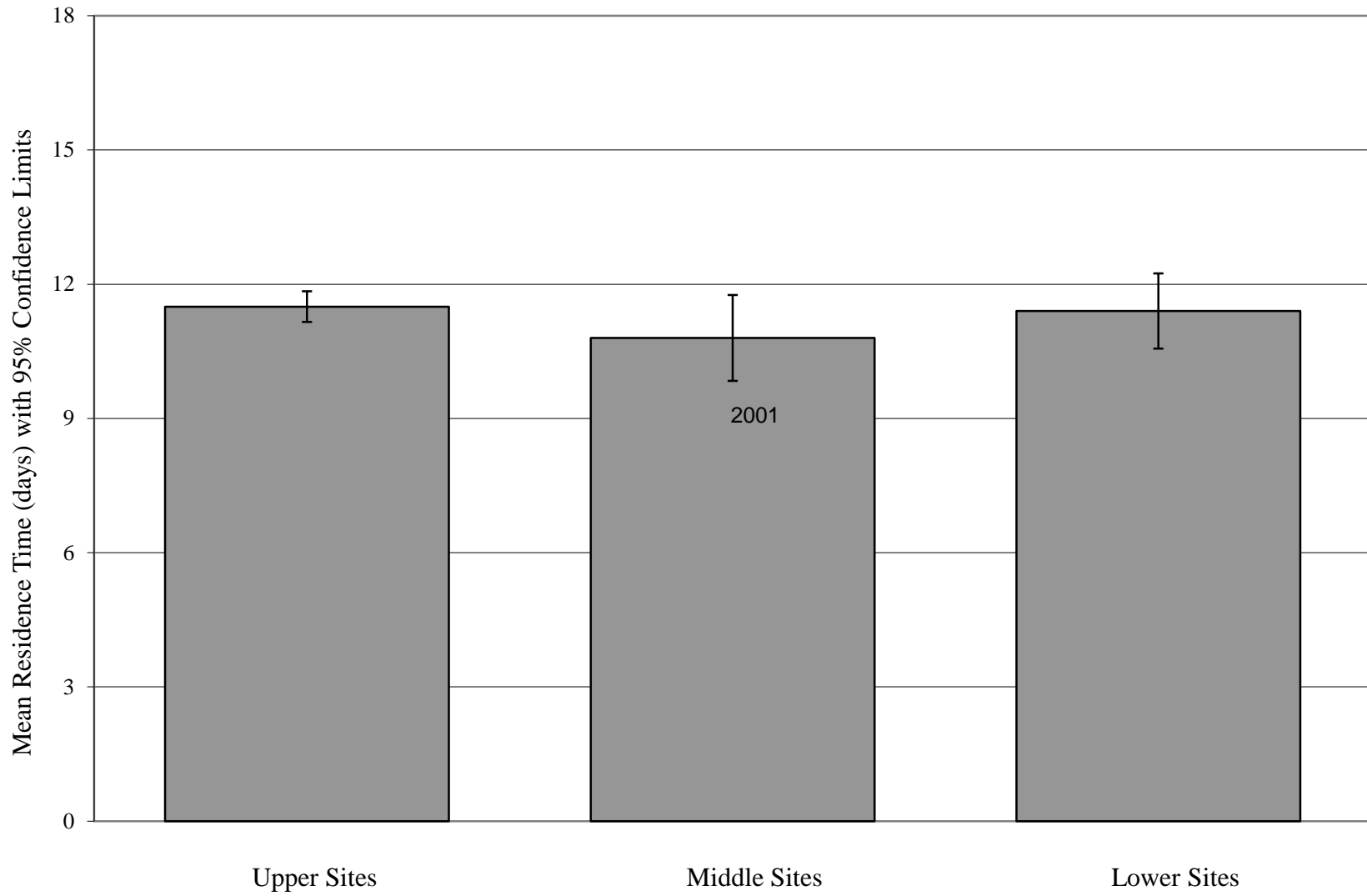
Appendix 4
Nechako River Chinook Mean Residence Time by Site, 1999



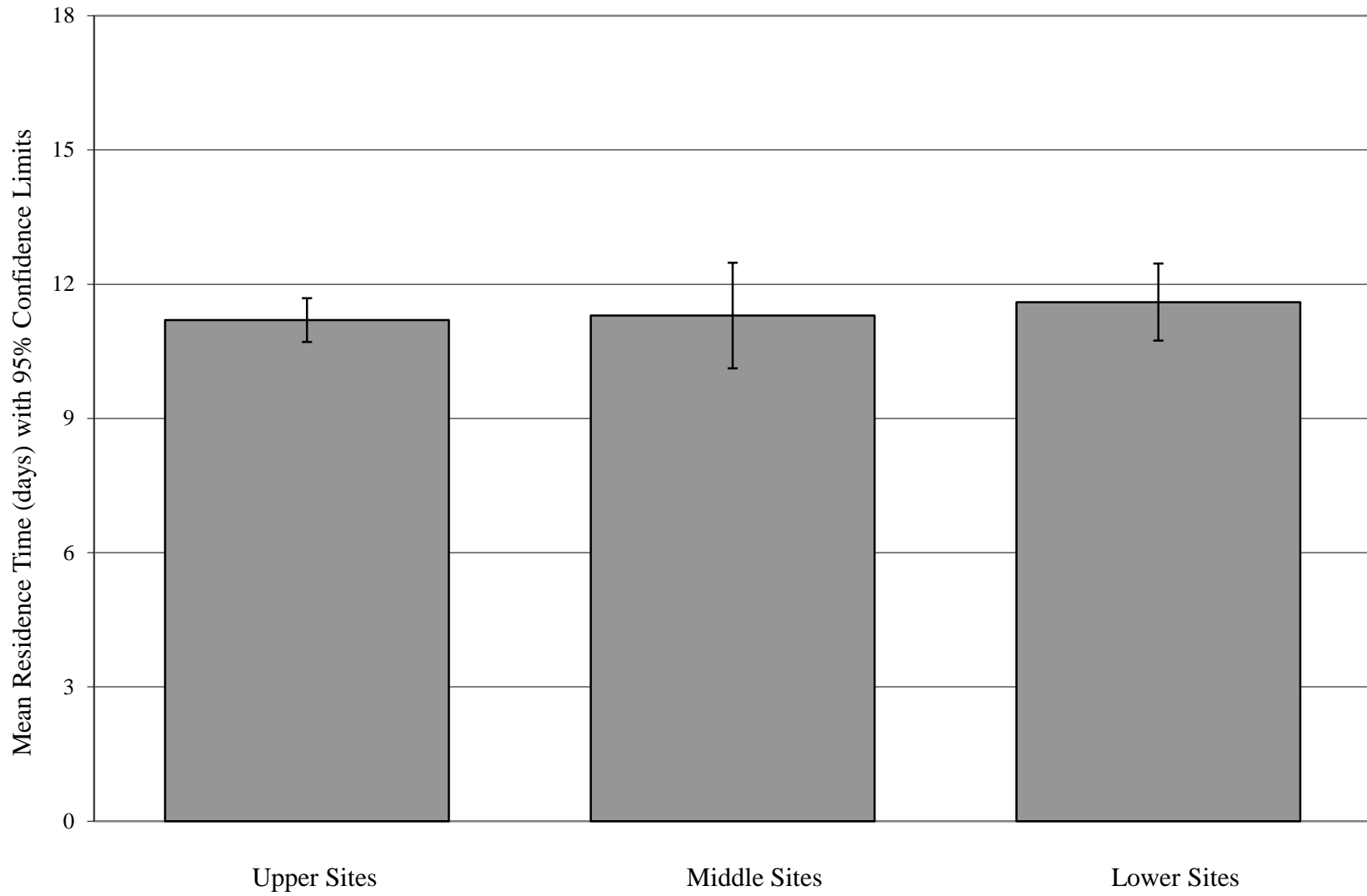
Appendix 4
Nechako River Chinook Mean Residence Time by Site, 2000



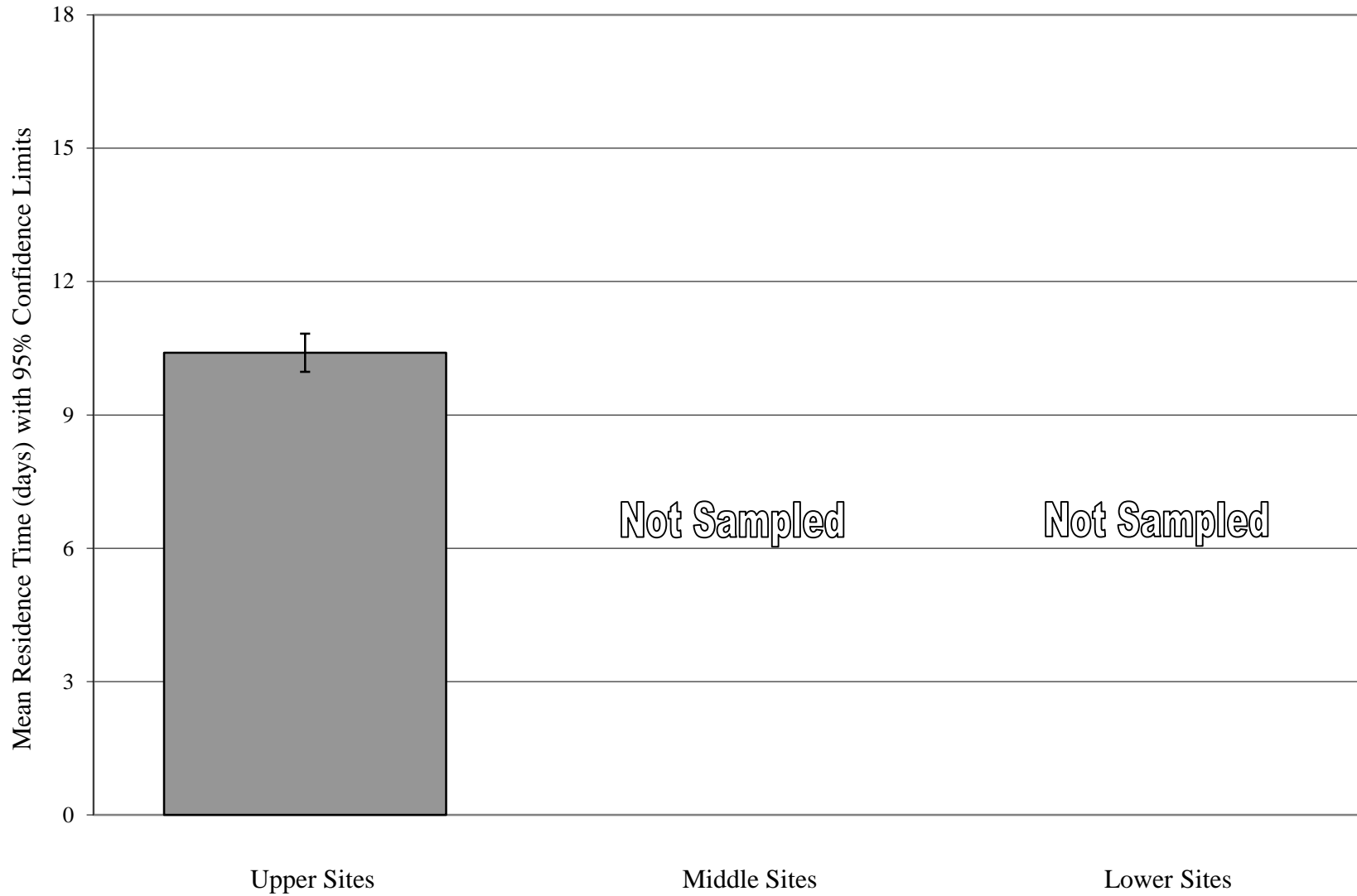
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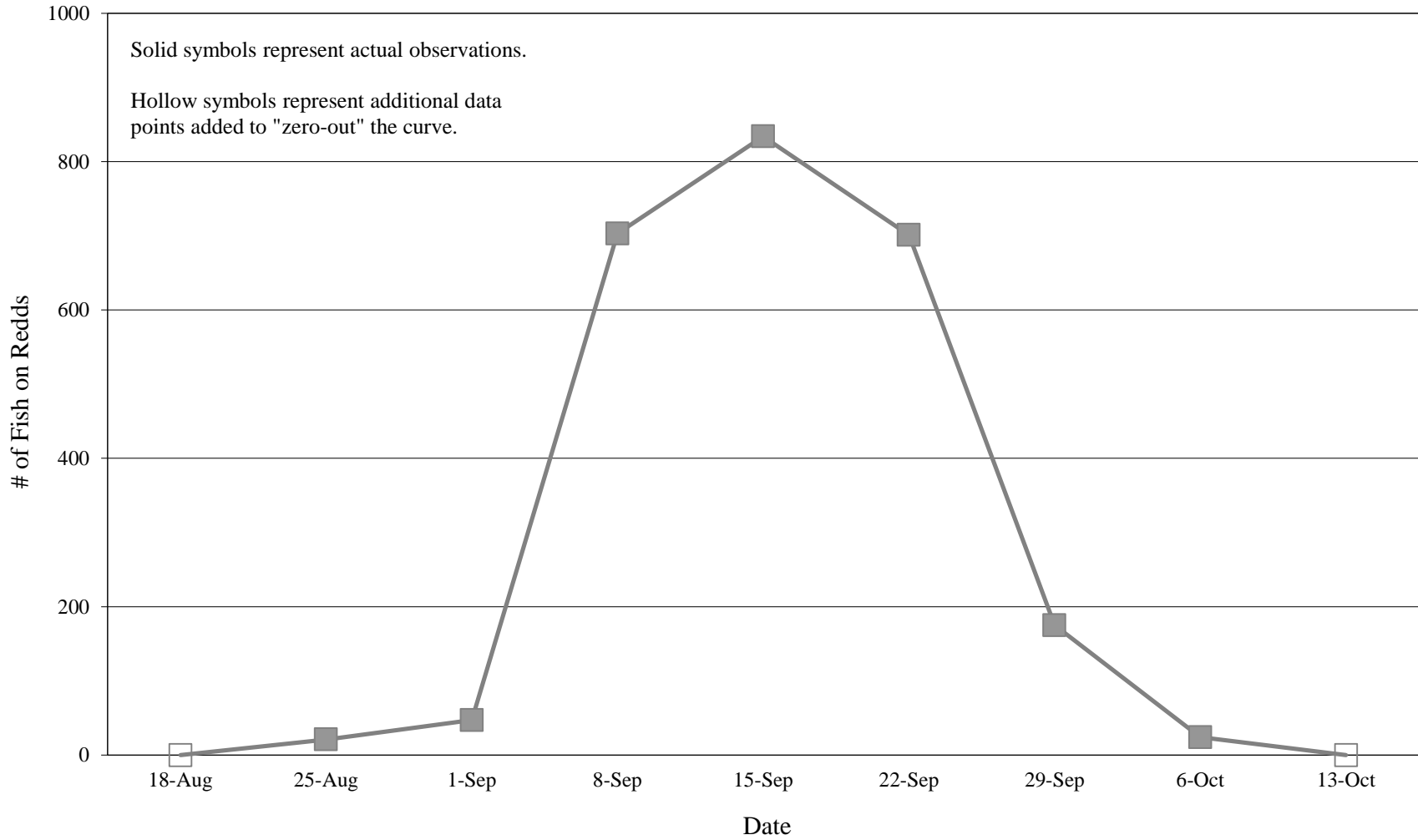
Appendix 4
Nechako River Chinook Mean Residence Time by Site, 2002



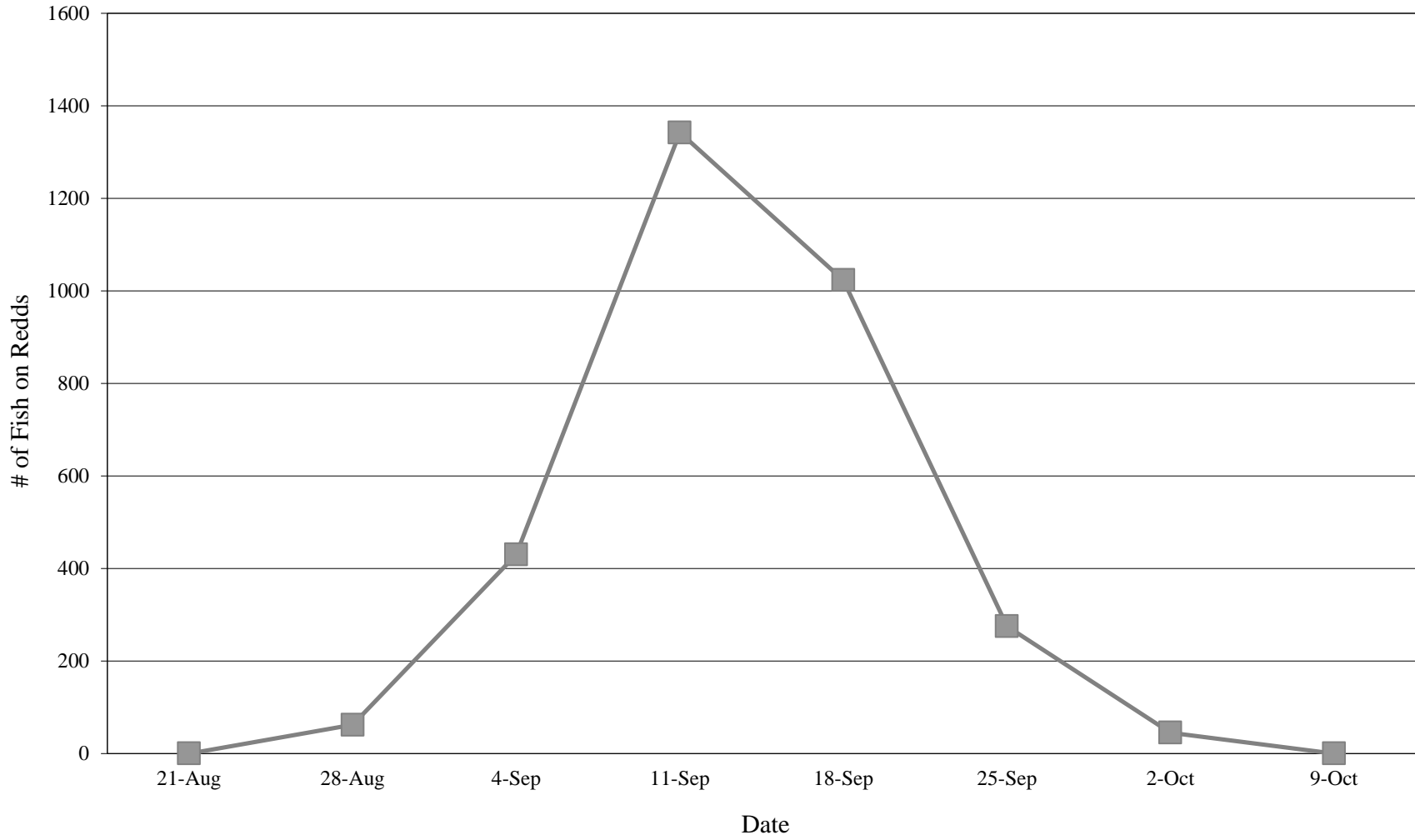
Appendix 4
Nechako River Chinook Mean Residence Time by Site, 2003



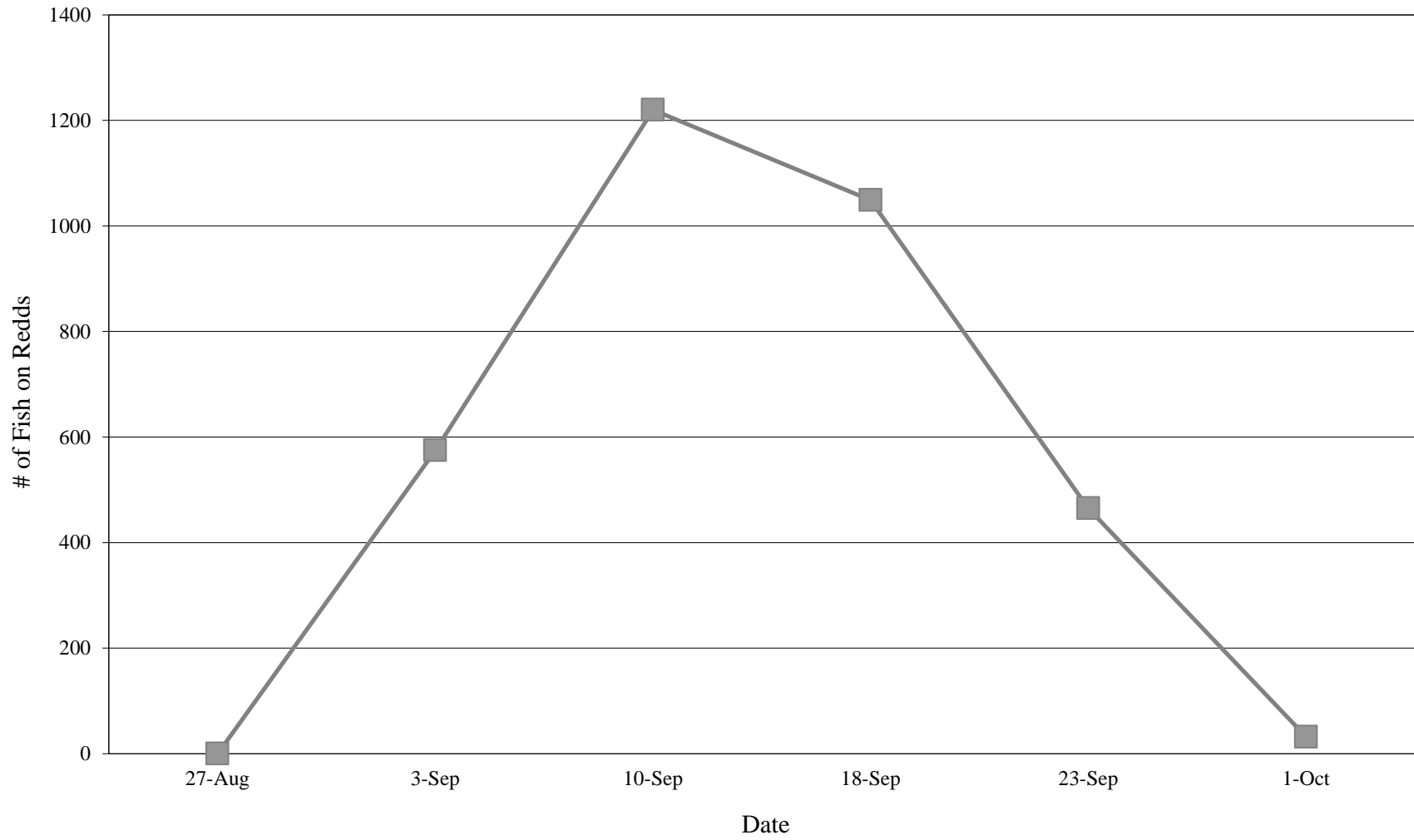
Appendix 5
Nechako River Chinook Area-Under-the-Curve, 1995



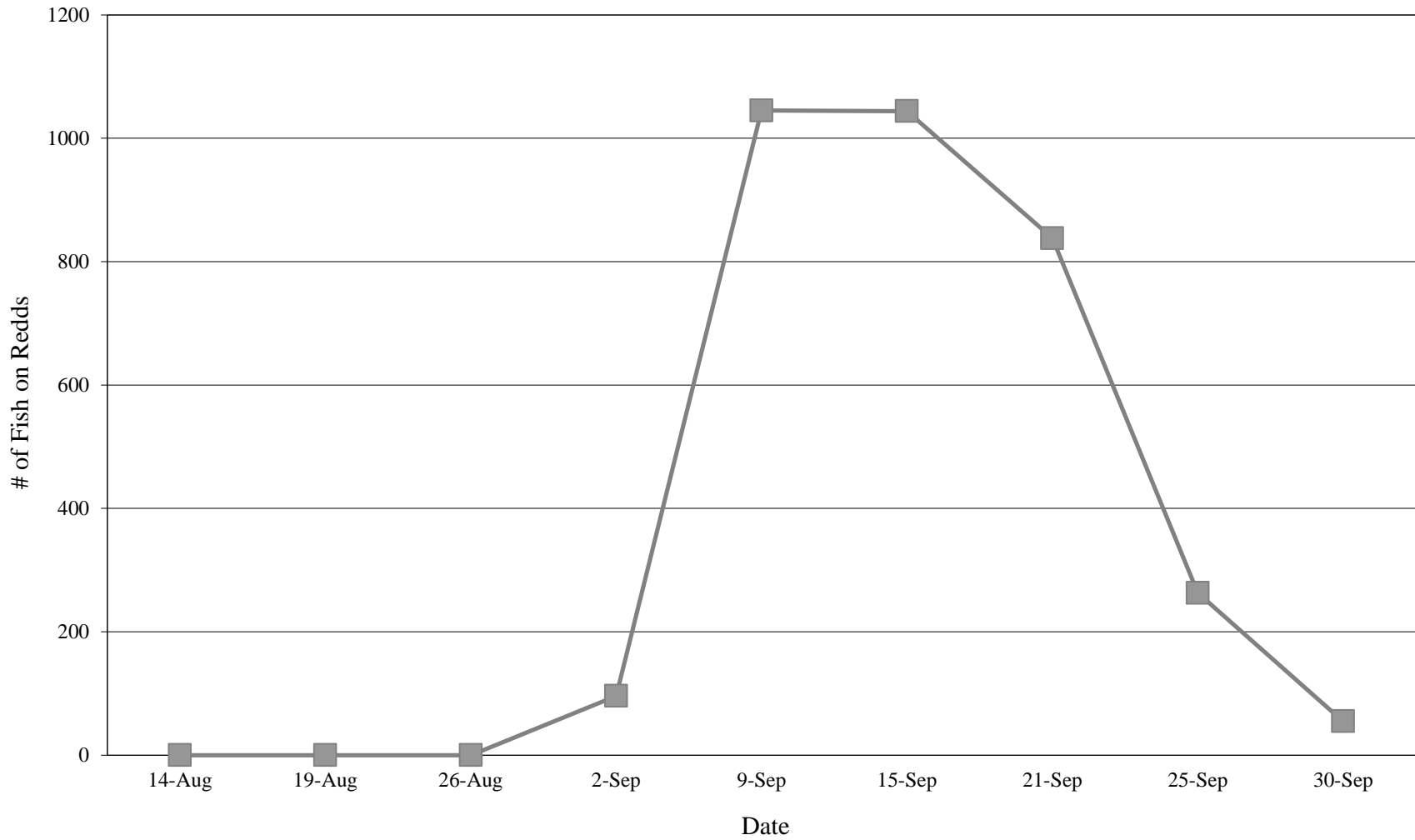
Appendix 5
Nechako River Chinook Area-Under-the-Curve, 1996



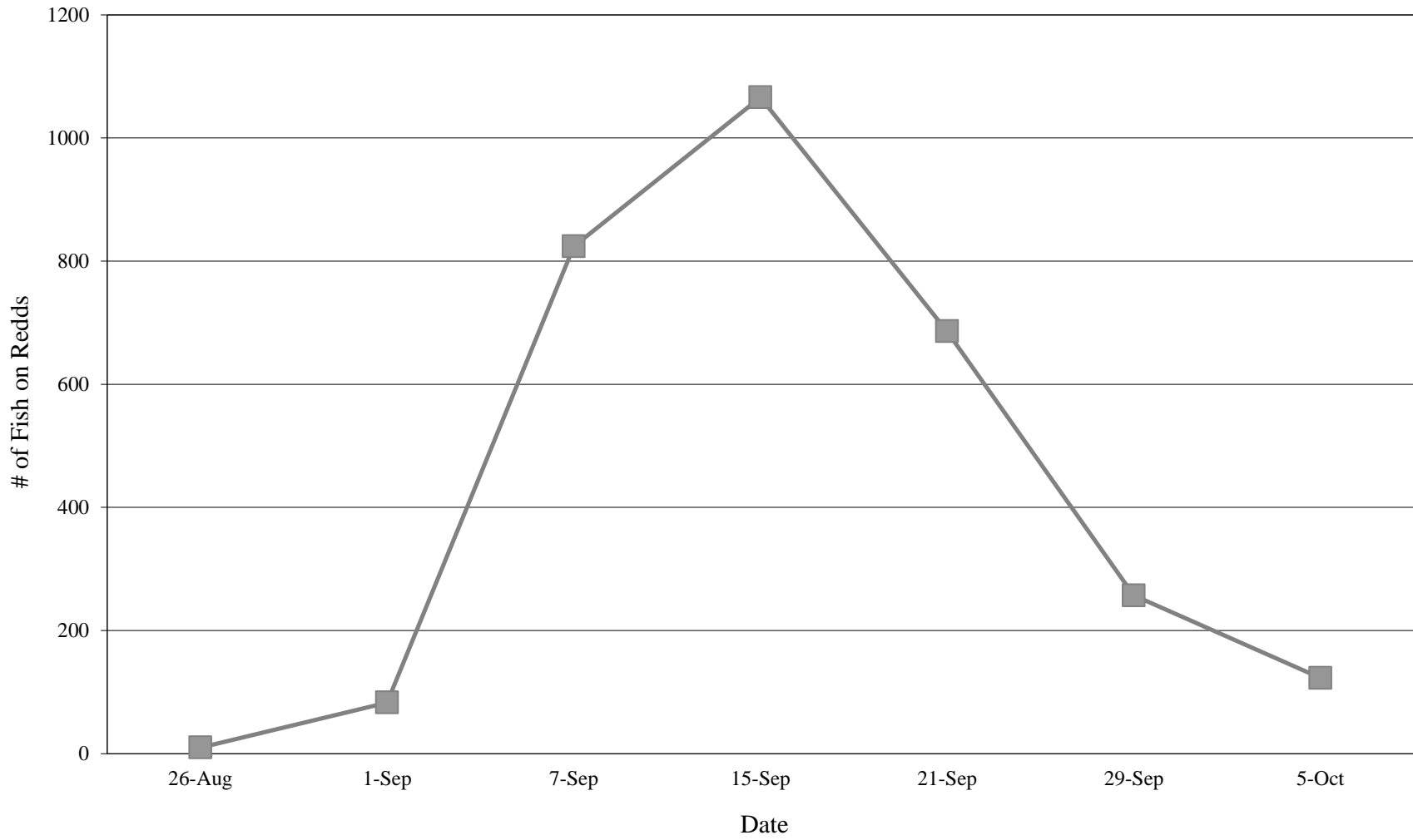
Appendix 5
Nechako River Chinook Area-Under-the-Curve, 1997



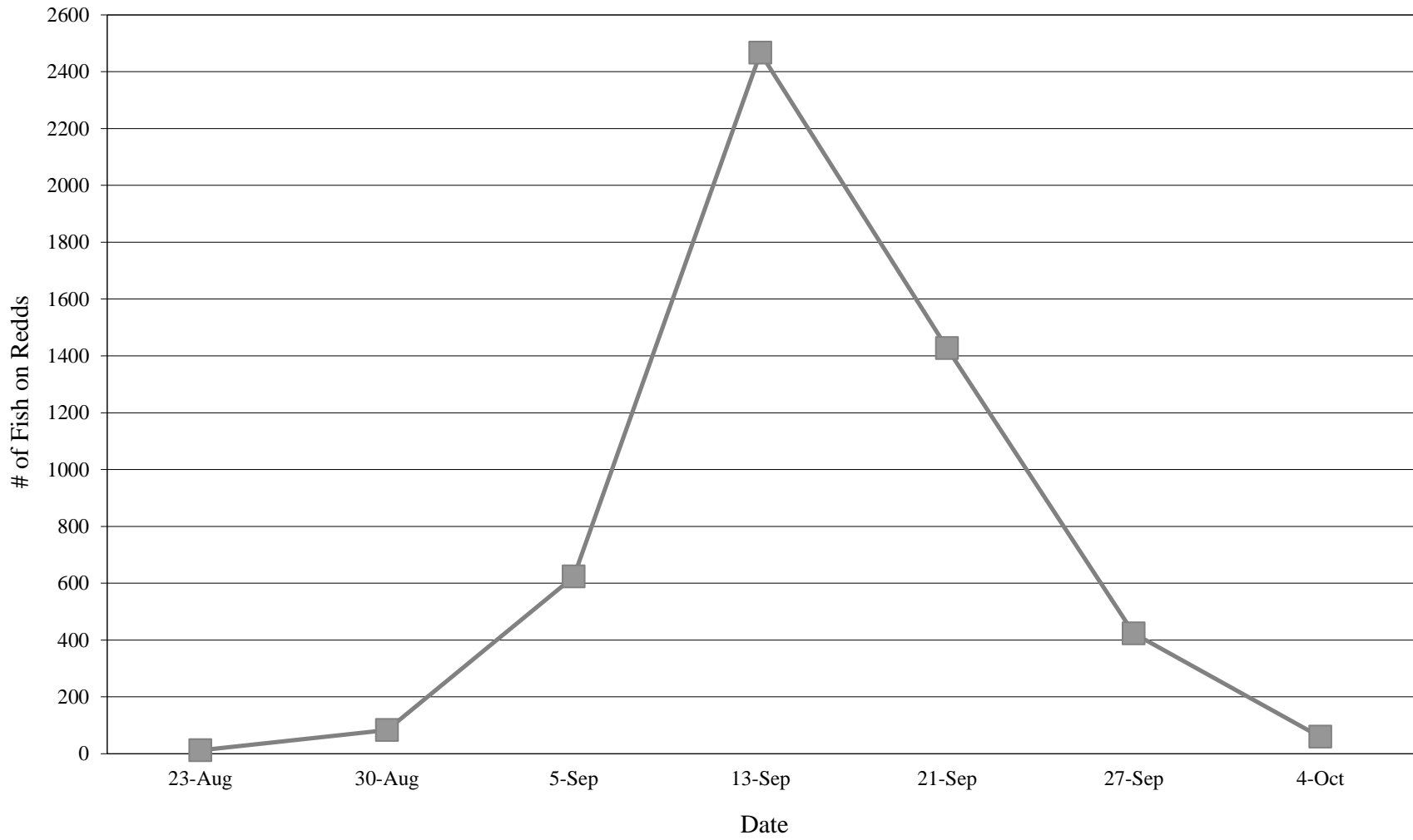
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Nechako River Chinook Area-Under-the-Curve, 1998



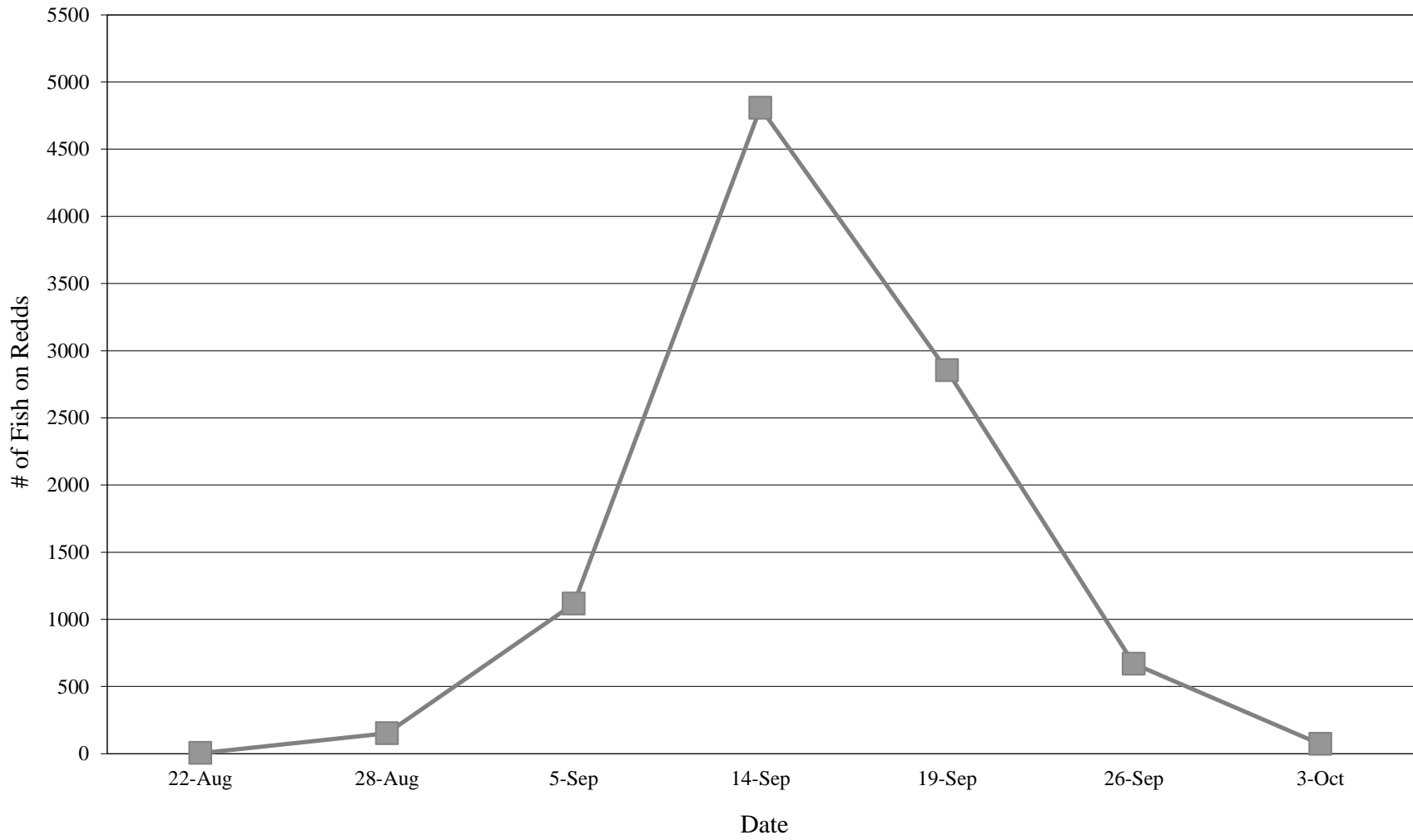
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Nechako River Chinook Area-Under-the-Curve, 1999



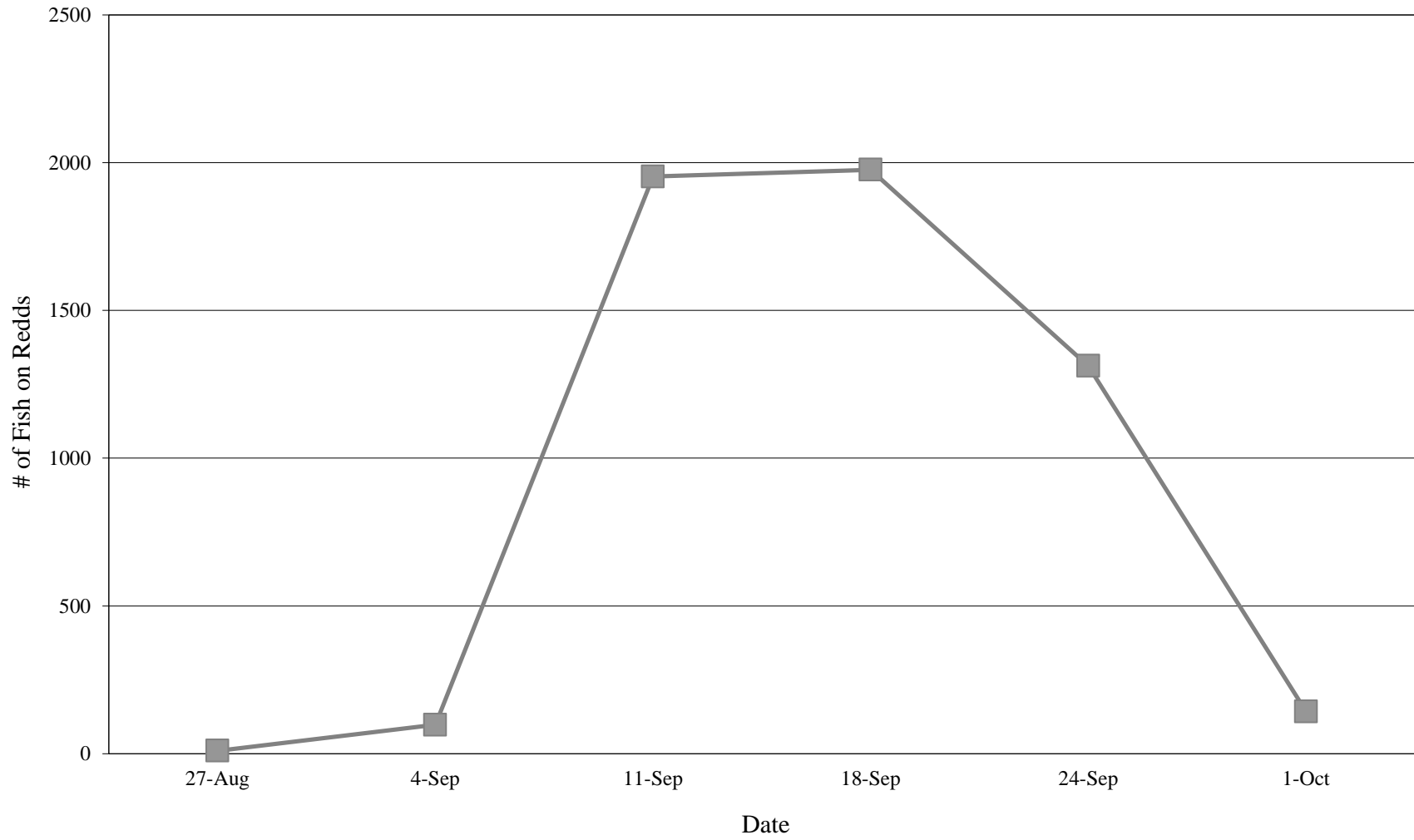
Appendix 5
Nechako River Chinook Area-Under-the-Curve, 2000



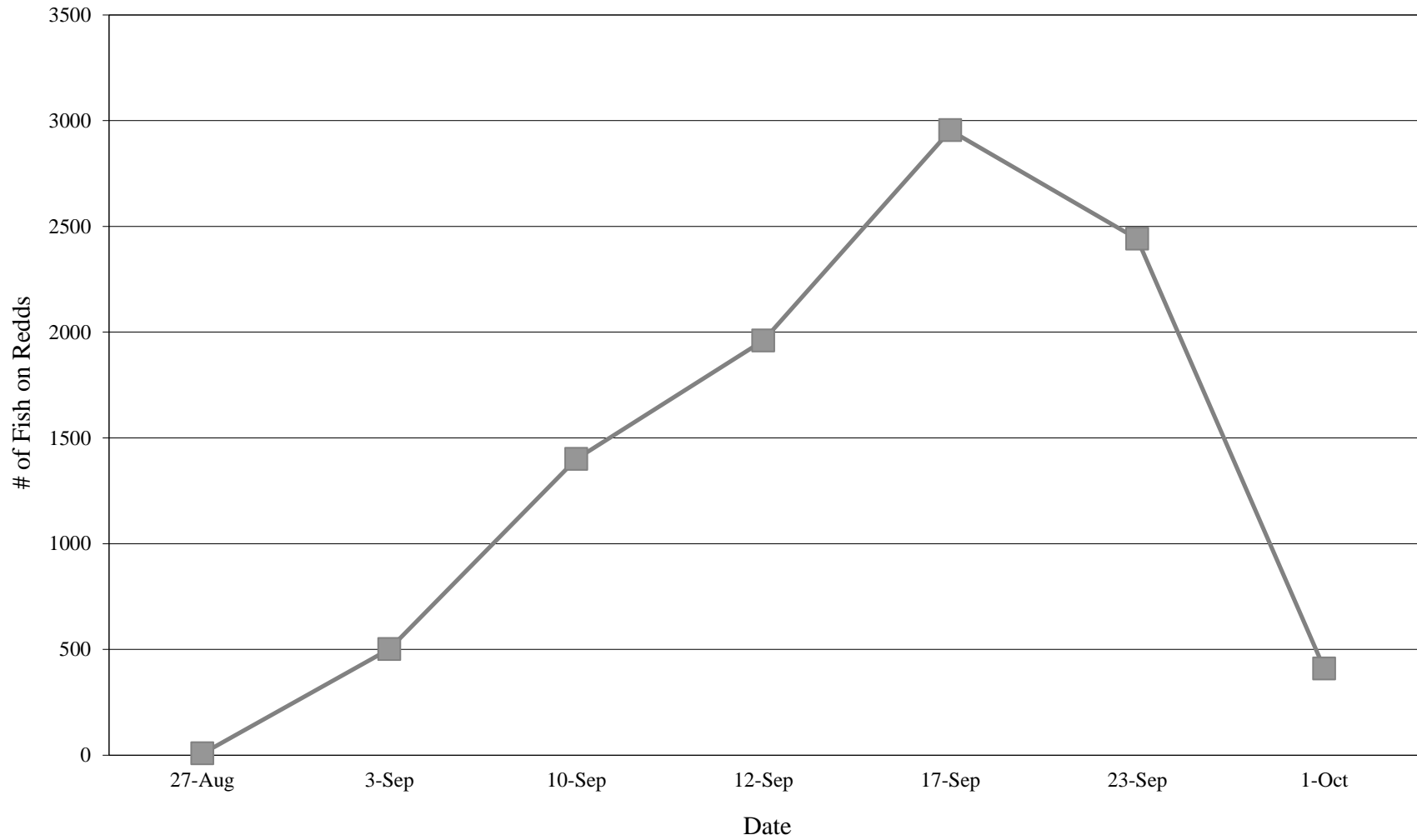
Appendix 5
Nechako River Chinook Area-Under-the-Curve, 2001



Appendix 5
Nechako River Chinook Area-Under-the-Curve, 2002



Appendix 5
Nechako River Chinook Area-Under-the-Curve, 2003



Appendix 6. Stuart River Chinook Carcass Recoveries by Zone, 1995-2003

Summary of Chinook Recoveries in the Stuart River, 1995

River Zone	Chinook Carcasses (Number)			Chinook Carcasses (Percent)		
	M	F	Total	M	F	Total
Zone A	29	64	93	1.8	3.9	5.7
Zone B	56	96	152	3.4	5.8	9.3
Zone C	110	133	243	6.7	8.1	14.8
Zone D	286	461	747	17.4	28.1	45.5
Zone E	169	239	408	10.3	14.5	24.8
Total	650	993	1643	39.6	60.4	100.0

Note: Male total includes 5 jacks

Summary of Chinook Recoveries in the Stuart River, 1996

River Zone	Chinook Carcasses (Number)			Chinook Carcasses (Percent)		
	M	F	Total	M	F	Total
Zone A	23	71	94	0.9	2.8	3.7
Zone B	19	57	76	0.7	2.2	3.0
Zone C	117	227	344	4.6	8.8	13.4
Zone D	274	553	827	10.7	21.5	32.2
Zone E	132	210	342	5.1	8.2	13.3
Zone F	411	475	886	16.0	18.5	34.5
Total	976	1593	2569	38.0	62.0	100.0

Note: Male total includes 10 jacks

Summary of Chinook Recoveries in the Stuart River, 1999

River Zone	Chinook Carcasses (Number)			Chinook Carcasses (Percent)		
	M	F	Total	M	F	Total
Zone A	5	11	16	0.9	2.0	2.9
Zone B	12	17	29	2.2	3.1	5.3
Zone C	56	72	128	10.3	13.3	23.6
Zone D	102	133	235	18.8	24.5	43.3
Zone E	25	27	52	4.6	5.0	9.6
Zone F	39	44	83	7.2	8.1	15.3
Total	239	304	543	44.0	56.0	100.0

Note: No jacks were counted in 1999.

Summary of Chinook Recoveries in the Stuart River, 2000

River Zone	Chinook Carcasses (Number)			Chinook Carcasses (Percent)		
	M	F	Total	M	F	Total
Zone A	6	41	47	0.5	3.7	4.3
Zone B	15	50	65	1.4	4.6	5.9
Zone C	63	164	227	5.8	15.0	20.7
Zone D	115	231	346	10.5	21.1	31.6
Zone E	82	95	177	7.5	8.7	16.2
Zone F	78	113	191	7.1	10.3	17.4
Zone G	18	24	42	1.6	2.2	3.8
Total	377	718	1095	34.4	65.6	100

Note: Male total includes 3 jacks

Summary of Chinook Recoveries in the Stuart River, 1997

River Zone	Chinook Carcasses (Number)			Chinook Carcasses (Percent)		
	M	F	Total	M	F	Total
Zone A	37	57	94	1.8	2.8	4.6
Zone B	63	124	187	3.1	6.0	9.1
Zone C	285	301	586	13.8	14.6	28.4
Zone D	360	432	792	17.4	20.9	38.4
Zone E	84	92	176	4.1	4.5	8.5
Zone F	125	104	229	6.1	5.0	11.1
Total	954	1110	2064	46.2	53.8	100.0

Note: Male total includes 2 jacks

Summary of Chinook Recoveries in the Stuart River, 1998

River Zone	Chinook Carcasses (Number)			Chinook Carcasses (Percent)		
	M	F	Total	M	F	Total
Zone A	27	27	54	3.2	3.2	6.4
Zone B	26	34	60	3.1	4.0	7.1
Zone C	57	50	107	6.8	5.9	12.7
Zone D	114	157	271	13.5	18.6	32.1
Zone E	77	84	161	9.1	10.0	19.1
Zone F	91	99	190	10.8	11.7	22.5
Total	392	451	843	46.5	53.5	100.0

Note: No jacks were counted in 1998.

2001 Stuart Chinook Recovery Data Incomplete

Summary of Chinook Recoveries in the Stuart River, 2002

River Zone	Chinook Carcasses (Number)			Chinook Carcasses (Percent)		
	M	F	Total	M	F	Total
Zone A	11	15	26	1.2	1.7	2.9
Zone B	21	41	62	2.3	4.6	6.9
Zone C	88	142	230	9.8	15.8	25.6
Zone D	137	229	366	15.2	25.4	40.7
Zone E	34	33	67	3.8	3.7	7.4
Zone F	79	70	149	8.8	7.8	16.6
Total	370	530	900	41.1	58.9	100.0

Note: Male total includes 3 jacks

Summary of Chinook Recoveries in the Stuart River, 2003

River Zone	Chinook Carcasses (Number)			Chinook Carcasses (Percent)		
	M	F	Total	M	F	Total
Zone A	52	59	111	1.3	1.5	2.8
Zone B	100	100	200	2.5	2.5	5.0
Zone C	354	300	654	8.9	7.6	16.5
Zone D	701	921	1622	17.7	23.2	40.9
Zone E	267	187	454	6.7	4.7	11.5
Zone F	436	382	818	11.0	9.6	20.6
Zone G	61	43	104	1.5	1.1	2.6
Total	1971	1992	3963	49.7	50.3	100.0

Note: Male total includes 12 jacks