NECHAKO AND STUART RIVERS
CHINOOK CARCASS RECOVERY
2002

NECHAKO FISHERIES CONSERVATION PROGRAM
Data Report No. M02-2

Prepared by:
Mark Potyrala and Byron Nutton
Fisheries and Oceans Canada
April 2011

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABSTRACT

In 2002 adult Chinook salmon (*Oncorhynchus tshawytscha*) carcasses were recovered from the Nechako and Stuart rivers in order to collect biological data on sex, size, fecundity, egg retention, life history and age. This information contributes to the database being compiled under the auspices of the Nechako Fisheries Conservation Program to monitor the Nechako Chinook population.

A total of 207 carcasses were collected on the Nechako River between September 13th and October 5th. Nechako River Chinook carcasses recovered in 2002 exhibited similar biological characteristics to those collected from 1988 to 2001. The female to male ratio of the sample fell within the range of the existing time series. Mean post-orbital hypural length for both males and females fell within the ranges observed in previous years. Mean egg retention for fully and partially spawned females was the second lowest on record. The spawning population was exclusively comprised of individuals with a stream-type life history and dominated by the 5_2 age-class.

On the Stuart River, 200 carcasses were sampled to collect information that could be used as a comparison to the Nechako data, to identify possible effects of flow regulation on the Nechako Chinook population. Since no obvious trends or anomalies were identified during the comparison of 2002 Nechako data to previous years, it was not necessary to use the information collected from the Stuart in this manner. However, the data are documented in this report in the event that longer-term analyses are required in the future.

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 carcass recovery projects on the Nechako and Stuart rivers each year. The purpose of these projects is to gather biological data on adult spawners, including: sex, size, fecundity, egg retention, life history and age. In particular, analysis of fish age indicates the relative contribution of each brood year to the current years' spawning population, which is used to interpret the results of the annual NFCP enumeration projects. The information collected from the Nechako River is compared to similar information collected from the Stuart River, an adjacent system unaffected by flow regulation (Figure 1), to assist in identifying potential effects of flow regulation on the Nechako Chinook population.

METHODS

Sampling was conducted throughout the period of Chinook spawner die-off, from mid-September to early October.

In the Nechako River sampling was conducted from Cheslatta Falls downstream to Vanderhoof (Figure 2). In order to ensure a representative sample, recovery effort was based on spawner distribution observed during helicopter surveys conducted as part of the concurrent enumeration project. The normal target sample size is 200 fish.

Sampling in the Stuart River was conducted from the outlet of Stuart Lake downstream to the confluence of Chinohchey Creek (Figure 3). Carcass sampling was conducted as part of the recovery portion of the mark-recapture enumeration program; all marked carcasses and representative portions of unmarked carcasses from each river section were sampled. The target sample size was set at a minimum of 250 fish, slightly higher than the normal target for the Nechako since Stuart escapements are typically higher. As the escapement to the Stuart River in 2002 was much lower than normal, the target sampling amount was limited to 200 fish.

In each river, several sampling surveys were conducted throughout the period of die-off to ensure that both early and late spawners were represented in the samples. The surveys were conducted by running a jet boat downstream at low speed and recovering carcasses with a gaff. If the carcass was too badly decomposed or eaten by animals to measure body length or take scale samples, it was cut in half to prevent re-counting and returned to the river. Each carcass was assigned a number and its location and date of recovery recorded. When a sufficient number of carcasses had been collected, the crew stopped to collect the following samples and biological information:

- **sex:** The sex of each fish was determined based on morphology, and confirmed by abdominal incision and internal examination.
- **condition:** Carcass condition was recorded as: 1) fresh; 2) fair to good; 3) poor with some fungus; or 4) partially decomposed but still able to be sampled. In addition, other observations were recorded, particularly the presence of net scars or lamprey marks.
- **post-orbital hypural length (POHL):** The distance from the posterior margin of the orbit to the flexure of the hypural plate in the caudal peduncle was recorded to the nearest millimeter.
- **egg retention and fecundity:** The body cavities of females were checked for eggs. All eggs were counted unless the number was greater than 1000, in which case they were estimated volumetrically. In the case of under-developed eggs which could not be separated and

counted, the sample was recorded as a pre-spawn mortality with fully skeined eggs.

- **scales and fin rays:** Ten scales were taken from each processed carcass and stored in gummed, pre-numbered scale books. Five scales were taken from each side of the body in the preferred area (several rows above the lateral line between the posterior end of the dorsal fin and the anterior insertion of the anal fin). Care was taken to avoid regenerated, resorbed and irregular shaped scales. Dorsal fins from each carcass were removed with a knife, placed in pre-labeled plastic bags and frozen. Fish age was later determined by analysis of the scales and fin rays, conducted by staff at Fisheries and Oceans Canada (DFO) laboratory facilities.
- **adipose fin:** A missing adipose fin is evidence of a hatchery raised fish with a coded-wire tag implanted in its head. If the fin was missing, the head was removed and sent to an independent laboratory for tag removal and identification.

All processed carcasses were cut in half to prevent recounting and returned to the river.

RESULTS

Data collected from each Chinook carcass sampled in the Nechako and Stuart rivers in 2002 are presented in Appendices 1 and 2, respectively. Summaries of these data are provided in the respective sections below.

Nechako River

Between September 13th and October 5th a total of 207[1] carcasses were sampled from 10 of the 16 identified Sections representing all 3 river areas – upper, middle and lower river (Table 1). The observed sex ratio was 1.80 F/M, or 64% females and 36% males (n=207). One Chinook jack was collected. Of the carcasses sampled, 55% were fresh or only a few days old while 31% were determined to be in poor condition with some fungus (Table 2).

The length (POHL) of the fish sampled ranged from 365 to 861 mm, with a mean of 739 mm (n=74, SD=85) for males, 695 mm (n=133, SD=46) for females and 711 mm (n=207, SD=66) for all fish combined. For males, the majority of individuals sampled ranged in size from 701-800 mm while the majority of females ranged in size from 601-750 mm (Figure 4).

[1] Any discrepancy between the total number of carcasses sampled and the reported number of carcasses for various parameters is due to the fact that only partial data were recorded for some carcasses. However, all carcasses were maintained in the dataset and any partial data that was recorded was used in the appropriate analyses.

Of the total number of female carcasses sampled (n=133), none were found to be a pre-spawn mortality and all (100%) were determined to be fully spawned, based on egg retention of less than 1000. The mean egg retention of the fully spawned females was 14 eggs (n=133, SD=76, range 0–813).

Scale and fin samples from 200 carcasses recovered from the Nechako River were sent to the Pacific Biological Station in Nanaimo for age analysis. Complete ages were determined for 178 of those samples (Table 3). The results indicate that the majority of the fish sampled were of two age-classes, 5_2 (73%) and 4_2 (21%). A chi-square test was used to determine that the numbers of males and females in these age-classes were not significantly disproportionate to the sex ratio of the sample (p=0.95).

None of the recovered Chinook had an adipose fin missing, and no other form of marking or tagging was observed.

In addition to NFCP data collection requirements, 3 Sockeye salmon carcasses were sampled upstream of Larson's Canyon to provide information on this river spawning population. These samples were collected at the request of staff from DFO's Pacific Biological Station and are not directly related to the NFCP sampling program; therefore, the results are not documented in this report.

Stuart River

Between September 22nd and October 1st a total of 200[2] carcasses were sampled from the six Zones (1 to 6) within the study area (Table 4). The observed sex ratio was 1.17 F/M, or 54% females and 46% males (n=200). Of the 200 carcasses with condition documented, 49% were fresh or only a few days old and the remaining samples were determined to be in poor condition with some fungus (Table 5).

In addition to the carcasses sampled for this project, sex was determined for all carcasses recovered as part of the mark-recapture enumeration project, and documented in the Nechako and Stuart Rivers Chinook Enumeration report (NFCP M02-1). This information is relevant to

[2] Any discrepancy between the total number of carcasses sampled and the reported number of carcasses for various parameters is due to the fact that only partial data were recorded for some carcasses. However, all carcasses were maintained in the dataset and any partial data that was recorded was used in the appropriate analyses.

carcass sampling results presented in this report, and given the much larger sample size (n=900) is likely more representative of the population as a whole. In addition, using the larger dataset eliminates the potential bias associated with the practice of sampling all marked carcasses (sampling for tag application might have a sex bias). The observed sex ratio for this larger sample was 1.43 F/M, or 59% females and 41% males (n=900, including the carcasses selected for biological sampling).

The length (POHL) of the fish sampled ranged from 520 to 870 mm, with a mean of 690 mm for males (n=92, SD=81), 675 mm for females (n=108, SD=53) and 682 mm (n=200, SD=68) for all fish combined. The majority of sampled males were between 601-700 mm long while the majority of females were between 601-750 mm in length (Figure 5).

Of the total number of female carcasses sampled (n=108), none were found to be pre-spawn mortalities and one was found to be partially spawned (retained eggs of 1000>5000). Of the total number of female carcasses sampled, 107 (>99%) were determined to be fully spawned, based on egg retention of less than 1000. The mean egg retention of the fully spawned females was 6 eggs (n=107, SD=14, range 0–90). When combining fully and partially spawned data, mean egg retention was 20 eggs (n=108, SD=144, range 0–1500).

Scale and fin samples from all 200 carcasses recovered from the Stuart River were sent to the Pacific Biological Station in Nanaimo for age analysis. Complete ages were determined for 135 of those samples (Table 6). The results indicate that a majority of the fish sampled were of two age-classes, 5_2 (24%) and 4_2 (71%). The number of males and females in these age-classes was not significantly disproportionate to the sex ratio of the sample (chi-square test, p=0.73).

Carcasses with tags applied as part of the mark-recapture program were collected. This data is documented in the Nechako and Stuart Rivers Chinook Enumeration report (NFCP M02-1) as the tags are not relevant to the biological sampling project. No other form of marking or tagging was observed.

DISCUSSION - COMPARISON TO PREVIOUS YEARS

Nechako River

A comparison of 2002 Nechako River Chinook carcass recovery data was made to data collected by the NFCP each year since 1988 (NFCP M88-4 and M89-2 to M01-2). Although some limited data were collected prior to 1988 it was not deemed necessary to include these data in the comparison, since information has been collected by the NFCP for several years using standardized methods and study areas. The exception is the discussion on fecundity which includes data collected prior to the inception of the NFCP. This exception was made because the prior data adds substantially to the available dataset due to the paucity of information regarding Nechako River Chinook female fecundity.

The observed sex ratio of 1.80 F/M was within the existing range (1.10-2.23) observed from 1988-2001 (Figure 6) but significantly higher than the mean of 1.53 (n=14, SD=0.30), as indicated by 95% confidence limit of 1.37-1.68.

When comparing the mean length (POHL) of both males and females to observations from previous years, no obvious trends were apparent. For both sexes, the mean lengths observed in 2002 fell within the ranges observed in previous years (Figures 7 and 8).

No female pre-spawn mortalities were sampled, resulting in no change in the estimated average female fecundity of 6563 eggs per fish (Table 7). Although no further analysis of this statistic is conducted for this report, this value may contribute to other aspects of the NFCP monitoring projects, particularly the estimates of egg-to-fry survival.

The mean egg retention in fully and partially spawned carcasses was compared to values from previous years (Table 8). Though the 2002 mean is the second lowest observed during the time series the confidence limits do fit within the bounds of all years' results (Figure 9).

The Nechako River Chinook spawning population is almost exclusively comprised of individuals that spend one or more years as a fry or parr in fresh water before migrating out to the ocean (stream-type life history), and is dominated by 4_2 and 5_2 age-classes. These have been consistent observations since the inception of the NFCP monitoring program. In 2002, age-classes 4_2 and 5_2 accounted for 93% of the return, with all stream-type fish accounting for 98% (Table 9).

In addition to identifying life history strategies, age data combined with the current years' escapement estimate are used to determine the relative success of past brood years in generating subsequent returns to the river. Since this analysis requires the results of several years, age-at-return data since the inception of the NFCP is documented in Table 10 to facilitate the discussion in the Nechako and Stuart Rivers Chinook Enumeration report (NFCP M02-1).

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.

In 2002, 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.

ACKNOWLEDGMENTS

Nechako River carcass recovery was conducted by Colin Barnard.

Stuart River carcass recovery was carried out by Ecofor Consulting Ltd. and members of the Nak'azdli Band.

Staff at DFO’s Pacific Biological Station in Nanaimo analyzed the various samples.

Rhonda Thibeault and Liz Murphy assisted with data compilation.

REFERENCES

Anonymous. 1987. Settlement Agreement between Alcan Aluminum Ltd., the Minister of Fisheries and Oceans and the Minister of Energy, Mines and Petroleum. Signed September 14, 1987 in Vancouver, BC.

Fee, P. and M. Sheng. 1978. Nechako River Chinook Fry and Spawning Survey. Unpublished manuscript prepared by Department of Fisheries and Oceans, Vancouver, BC.

Jaremovic, L. and D. Rowland. 1988. Review of Chinook Salmon Escapements in the Nechako River, British Columbia. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 1963.

NFCP. Nechako and Stuart Rivers Chinook Carcass Recovery 1988 to 2001. Nechako Fisheries Conservation Program Data Reports M88-4 and M89-2 to M01-2.

Olmsted, W.R., M. Whelan and G.A. Vigers. 1980. 1979 Investigations of Fall Spawning Chinook Salmon **(***Oncorhynchus tshawytscha*), Nechako and Quesnel/Horsefly Rivers, B.C. Prepared by E.V.S. Consultants Ltd. North Vancouver, B.C. for the Department of Fisheries and Oceans.

Russell, L.R., K.R. Conlin, O.K. Johansen and U. Orr. 1983. Chinook Salmon Studies on the Nechako River: 1980, 1981, 1982. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 1728.

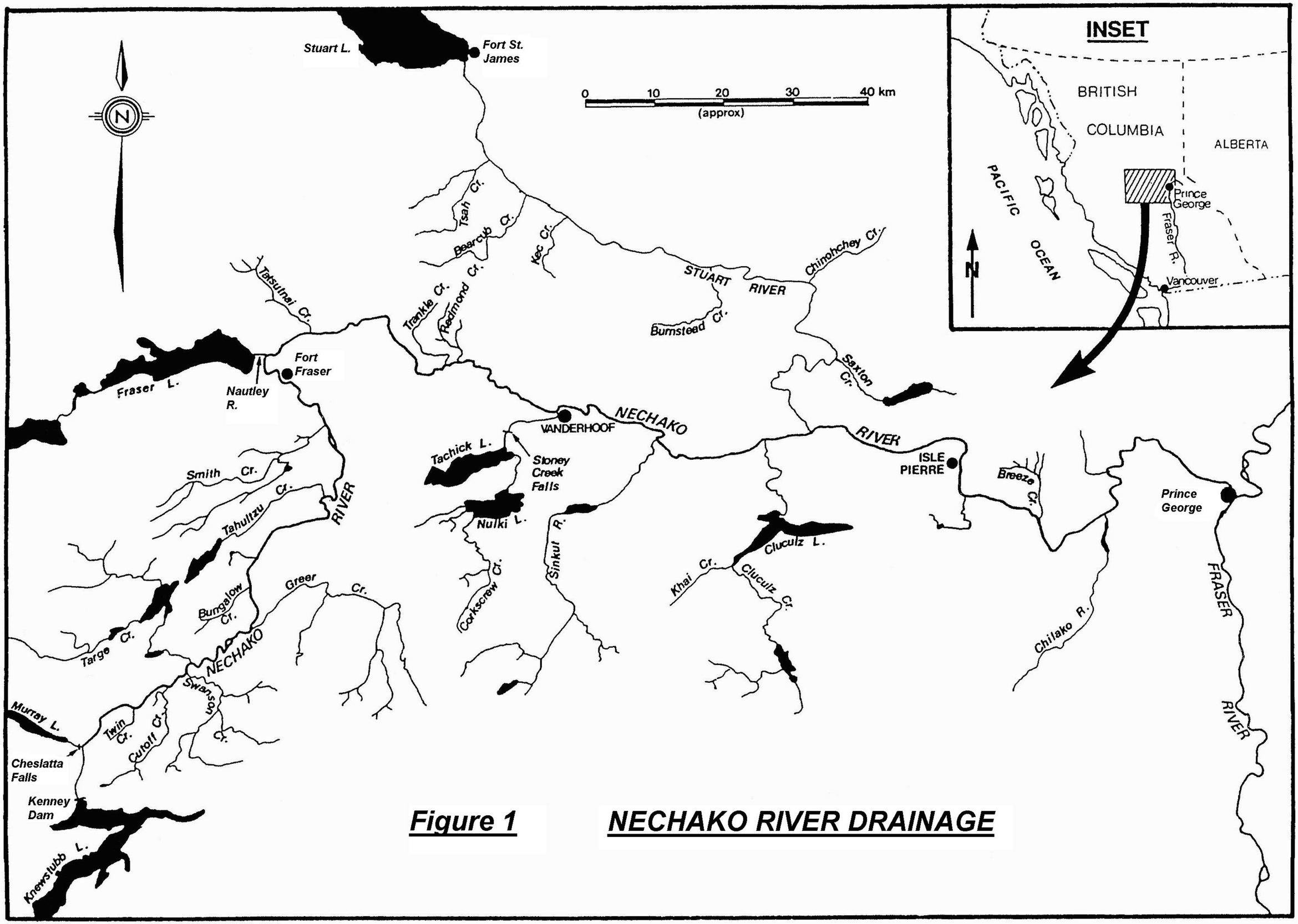


Figure 1 **NECHAKO RIVER DRAINAGE**

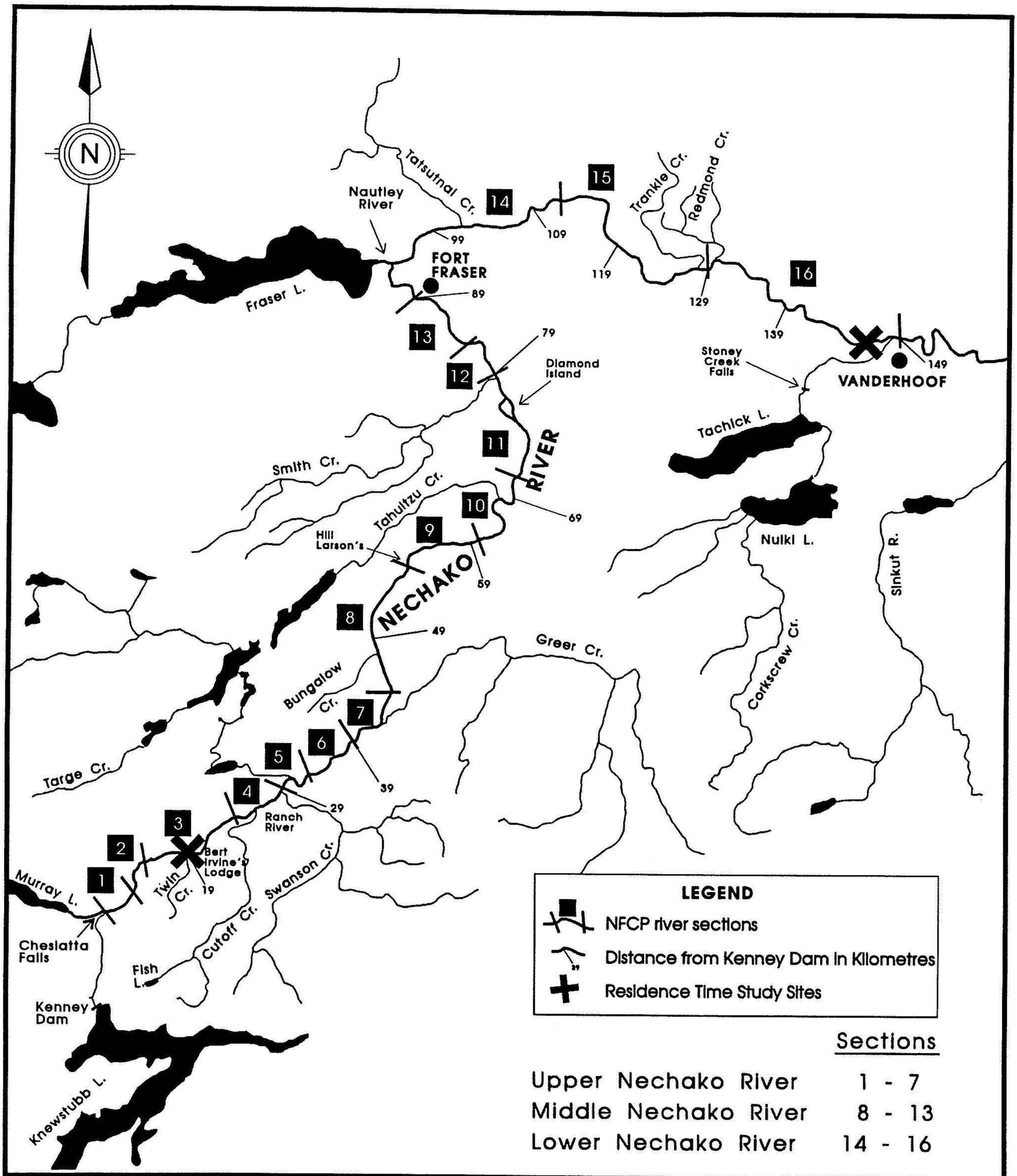


FIGURE 2. NECHAKO RIVER CHINOOK SPAWNING STUDY AREA

Figure 3

STUART RIVER CHINOOK SPAWNING STUDY AREA

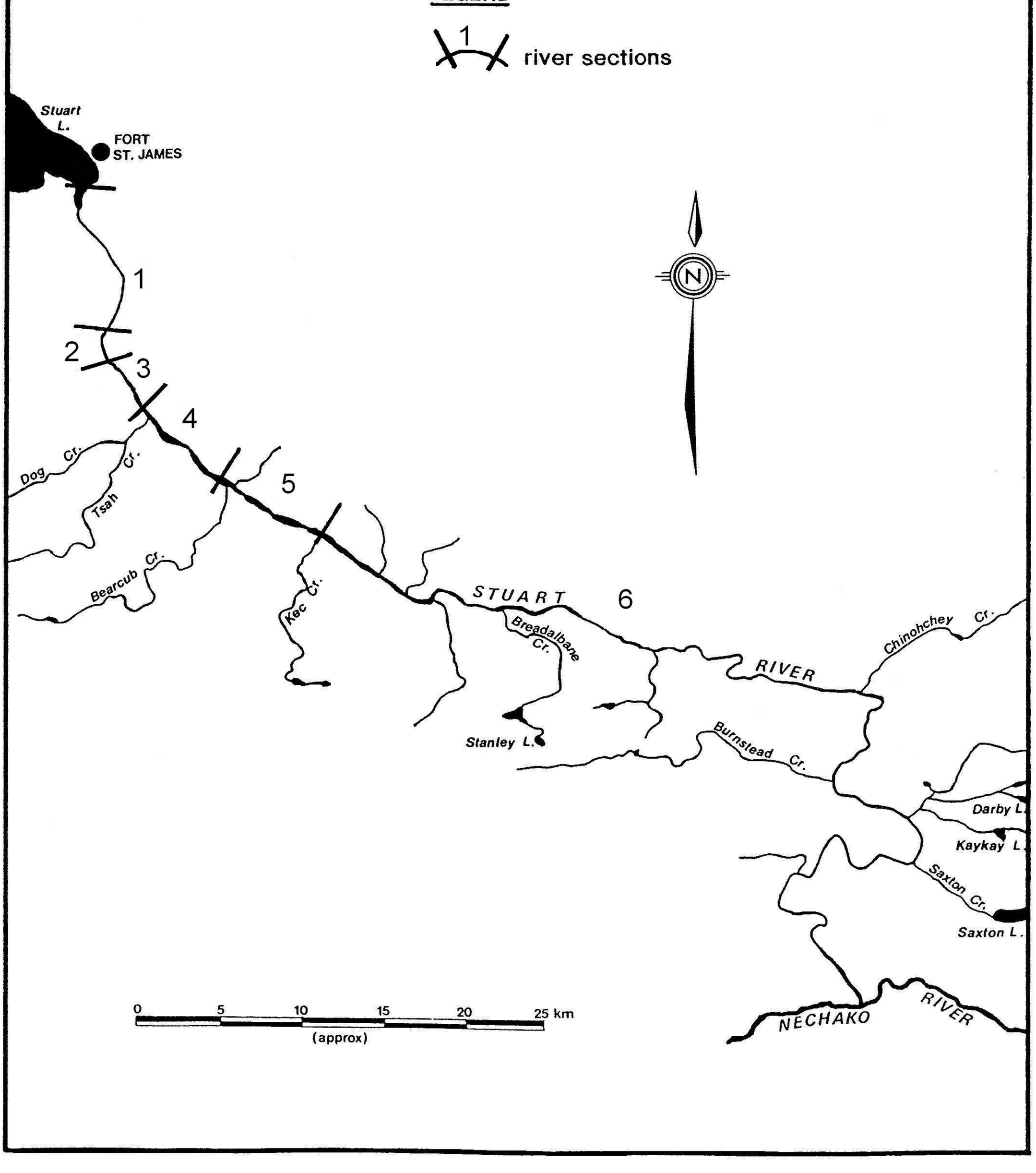


Table 1
Nechako River Chinook Carcass Recovery by Section, 2002

Section	Number	Percent
UPPER NECHAKO		
Section 1	0	0.0
Section 2	0	0.0
Section 3	66	31.9
Section 4	25	12.1
Section 5	23	11.1
Section 6	22	10.6
Section 7	0	0.0
SUB-TOTAL	136	65.7
MIDDLE NECHAKO		
Section 8	0	0.0
Section 9	32	15.5
Section 10	0	0.0
Section 11	5	2.4
Section 12	20	9.7
Section 13	8	3.9
SUB-TOTAL	65	31.4
LOWER NECHAKO		
Section 14	0	0.0
Section 15	5	2.4
Section 16	1	0.5
SUB-TOTAL	6	2.9
TOTAL RIVER	207	100.0

Table 2
Nechako River Chinook Carcass Condition, 2002

Condition *	Number	Percent
1	57	27.5
2	56	27.1
3	65	31.4
4	29	14.0
TOTAL	207	100.0

* Carcass Condition
1 - Fresh carcass
2 - Fair to good carcass (2 - 3 days old)
3 - Poor carcass condition with some fungus
4 - Very old and decomposed carcass

Table 3
Nechako River Chinook Age Composition (%) by Sex, 2002

	3-2	4-1	4-2	5-1	5-2	6-2	Total # Aged
Males	1.5	1.5	19.4	1.5	68.7	7.5	67
Females	0.0	1.8	21.6	0.0	74.8	1.8	111

Table 4
Stuart River Chinook Carcass Recovery by Zone, 2002

Zone	Number	Percent
1	2	1.0
2	19	9.5
3	48	24.0
4	91	45.5
5	11	5.5
6	29	14.5
TOTAL	200	100.0

Table 5
Stuart River Chinook Carcass Condition, 2002

Condition *	Number	Percent
1	11	5.5
2	86	43.0
3	100	50.0
4	3	1.5
TOTAL	200	100.0

* Carcass Condition
1 - Fresh carcass
2 - Fair to good carcass (2 - 3 days old)
3 - Poor carcass condition with some fungus
4 - Very old and decomposed carcass

Table 6
Stuart River Chinook Age Composition (%) by Sex, 2002

	4-2	5-2	5-3	6-3	Total # Aged
Males	71.2	22.7	3.0	3.0	66
Females	71.0	26.1	1.4	1.4	69

Table 7
Nechako River Chinook Fecundity, 1978-2002

Year	Post-orbital Hypural Length (mm)	Fecundity (eggs/female)	Sources*	Cumulative Mean
1978	684	5250	1	
1978	663	6305	1	
1979	703	7200	2	
1979	611	5313	2	
1979	611	5284	2	
1980	710	5000	3	
1980	710	5000	3	
1985	760	6800	4	5769
1989	733	6073		
1989	695	5831		
1989	720	5500		
1989	730	5065		5718
1990	760	8831		
1990	730	7040		6035
1991	715	7289		
1991	710	6901		
1991	670	5714		6141
1992	680	7395		
1992	705	7111		6258
1993	690	6848		
1993	630	5705		
1993	720	5575		6229
1995	706	6750		
1995	712	5109		6204
1998	751	10026		
1998	745	9473		
1998	765	8216		
1998	712	6437		6537
2001	642	7280		6563

*Sources: 1 = Fee and Sheng (1978),
2 = Olmsted *et al.* (1980),
3 = Russell *et al.* (1983), and
4 = Jaremovic and Rowland (1988)

Table 8
Nechako River Chinook Egg Retention, 1988-2002

	Fully Spawned			Partially Spawned		Fully + Partially
Year	n	range	mean	n	range	mean
1988	123	0-500	11.5	4	1000-4320	91.4
1989	144	0-757	21.5	3	2760-3960	90.6
1990	226	0-982	40.7	2	4066-4503	78
1991	154	0-732	22.4	2	1383-2005	43.8
1992	219	0-862	20.2	3	1484-4021	60.5
1993	100	0-529	32.8	3	1045-4686	115.8
1994	90	0-249	10.7	2	1565-2272	52.2
1995	144	0-899	38.3	8	1613-4600	216.1
1996	166	0-212	5.8	2	1100-3600	33.7
1997	127	0-326	13.1	4	2700-4081	125.5
1998	124	0-849	33.2	0	n/a	33.2
1999	129	0-389	9.2	4	3100-4000	113.5
2000	153	0-965	10.9	3	1366-3500	52.8
2001	274	0-636	12.4	0	n/a	12.4
2002	133	0-813	13.5	0	n/a	13.5

Table 9
Percent Contribution of Stream-type Life Histories
to Nechako Chinook Escapements, 1988-2002

Year	% Contribution		Sample Size
	4-2 + 5-2	All Stream-type	
1988	80	99	210
1989	81	97	200
1990	80	98	225
1991	68	96	210
1992	90	99	200
1993	85	100	188
1994	88	100	172
1995	97	99	207
1996	87	99	211
1997	96	100	206
1998	97	99	207
1999	95	100	204
2000	97	100	250
2001	99	100	180
2002	93	98	178

Table 10
Percent Contribution of Age-at-Return Groupings
to Nechako Chinook Escapements, 1988-2002

	% Contribution					Sample
Year	3 years	4 years	5 years	6 years	7 years	Size
1988	0.0	9.0	72.4	18.6	0.0	210
1989	1.0	30.0	52.5	15.5	1.0	200
1990	0.0	5.3	76.0	17.3	1.3	225
1991	1.0	16.7	54.3	25.7	2.4	210
1992	1.0	7.0	84.0	8.0	0.0	200
1993	0.0	13.3	71.8	14.9	0.0	188
1994	0.0	11.0	76.7	11.0	1.2	172
1995	0.0	14.0	84.5	1.4	0.0	207
1996	0.0	40.8	49.8	9.5	0.0	211
1997	0.0	20.9	75.7	3.4	0.0	206
1998	0.0	24.6	73.4	1.9	0.0	207
1999	0.5	44.1	51.0	4.4	0.0	204
2000	0.0	64.8	32.4	2.8	0.0	250
2001	0.0	11.1	88.3	0.6	0.0	180
2002	0.6	22.5	73.0	3.9	0.0	178

Figure 4
Nechako River Chinook Length Frequency Distribution, 2002

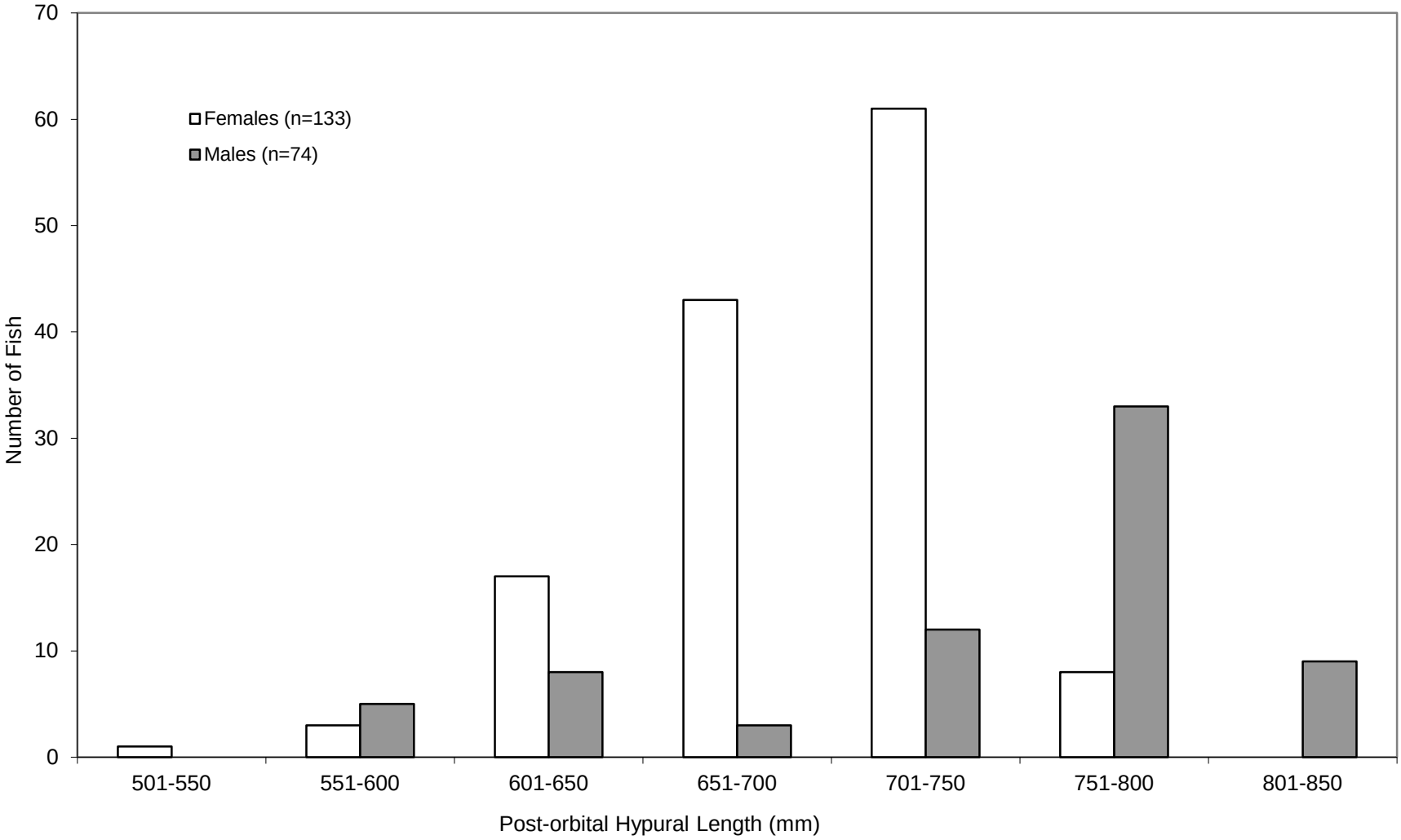


Figure 5
Stuart River Chinook Length Frequency Distribution, 2002

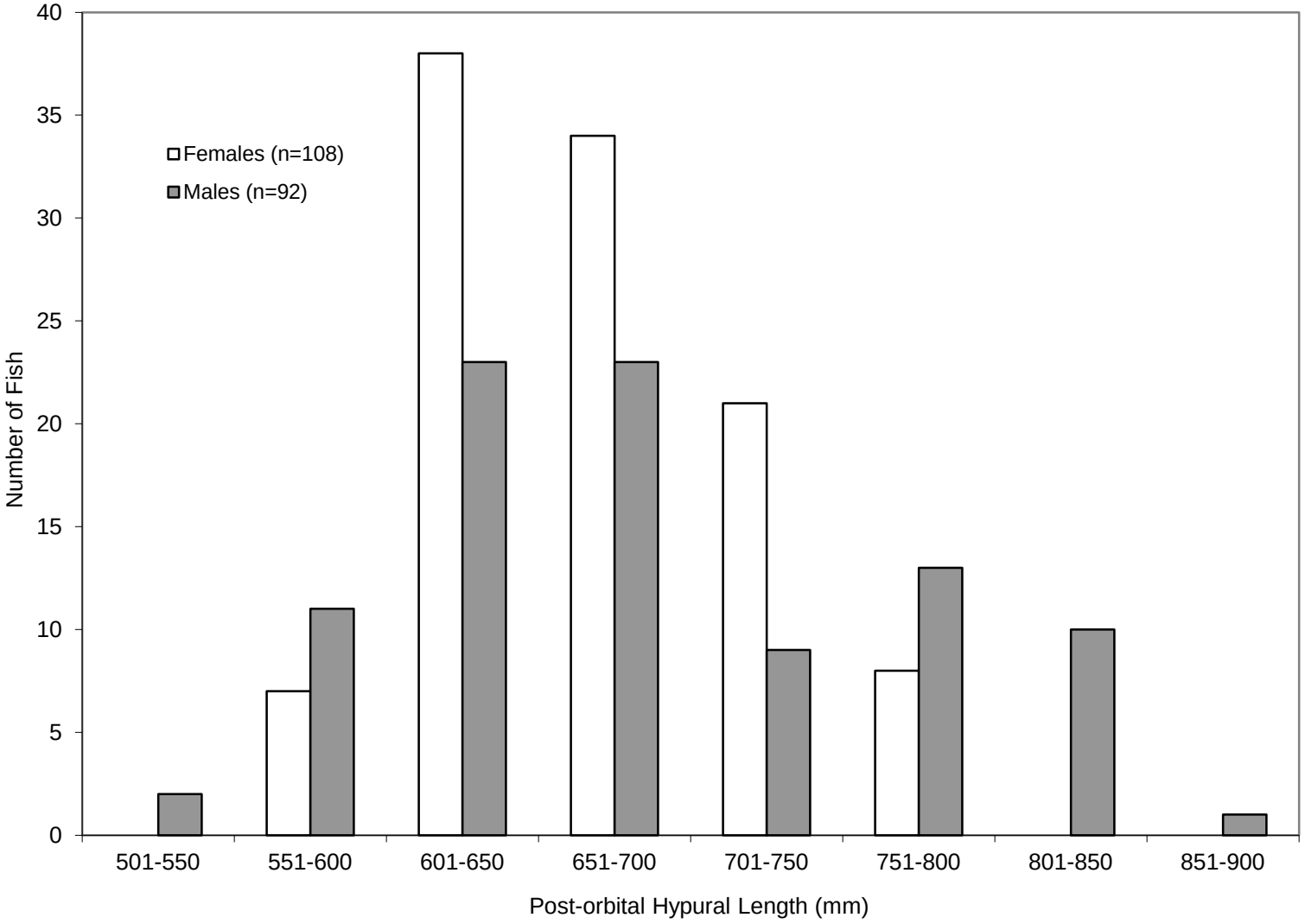


Figure 6
Nechako River Chinook Sex Ratio, 1988-2002

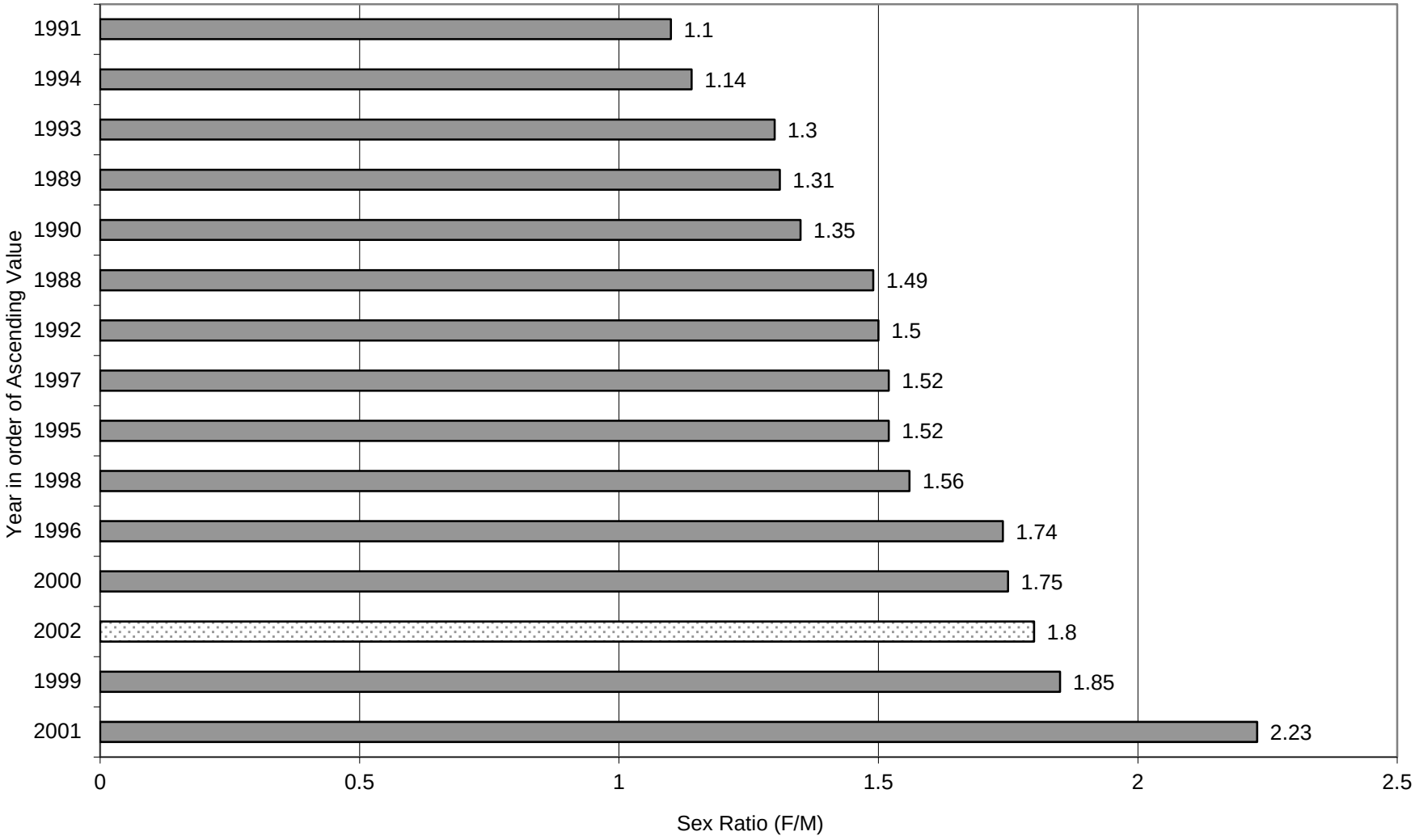


Figure 7
Nechako River Chinook Male Mean Length, 1988-2002

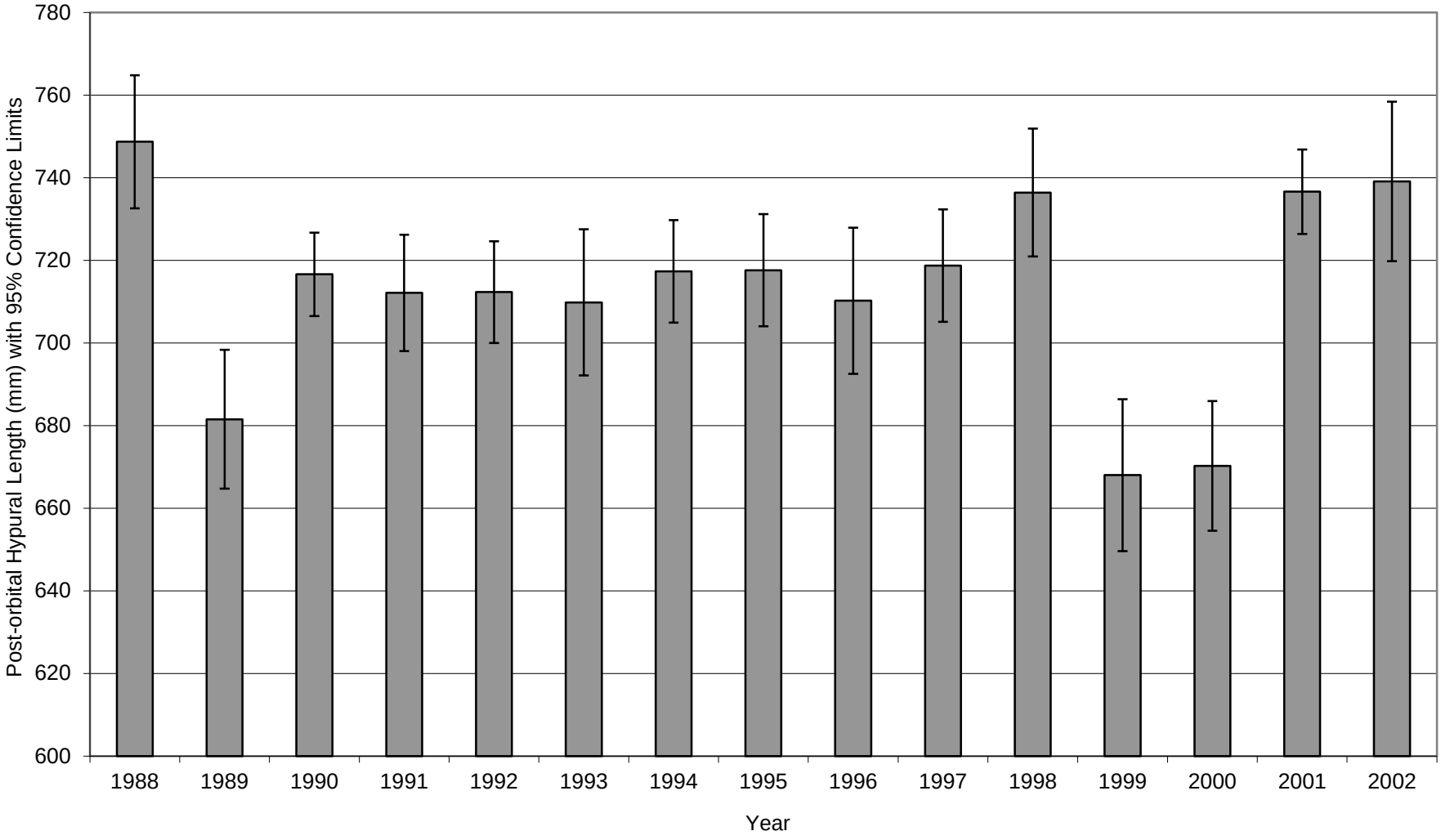


Figure 8
Nechako River Chinook Female Mean Length, 1988-2002

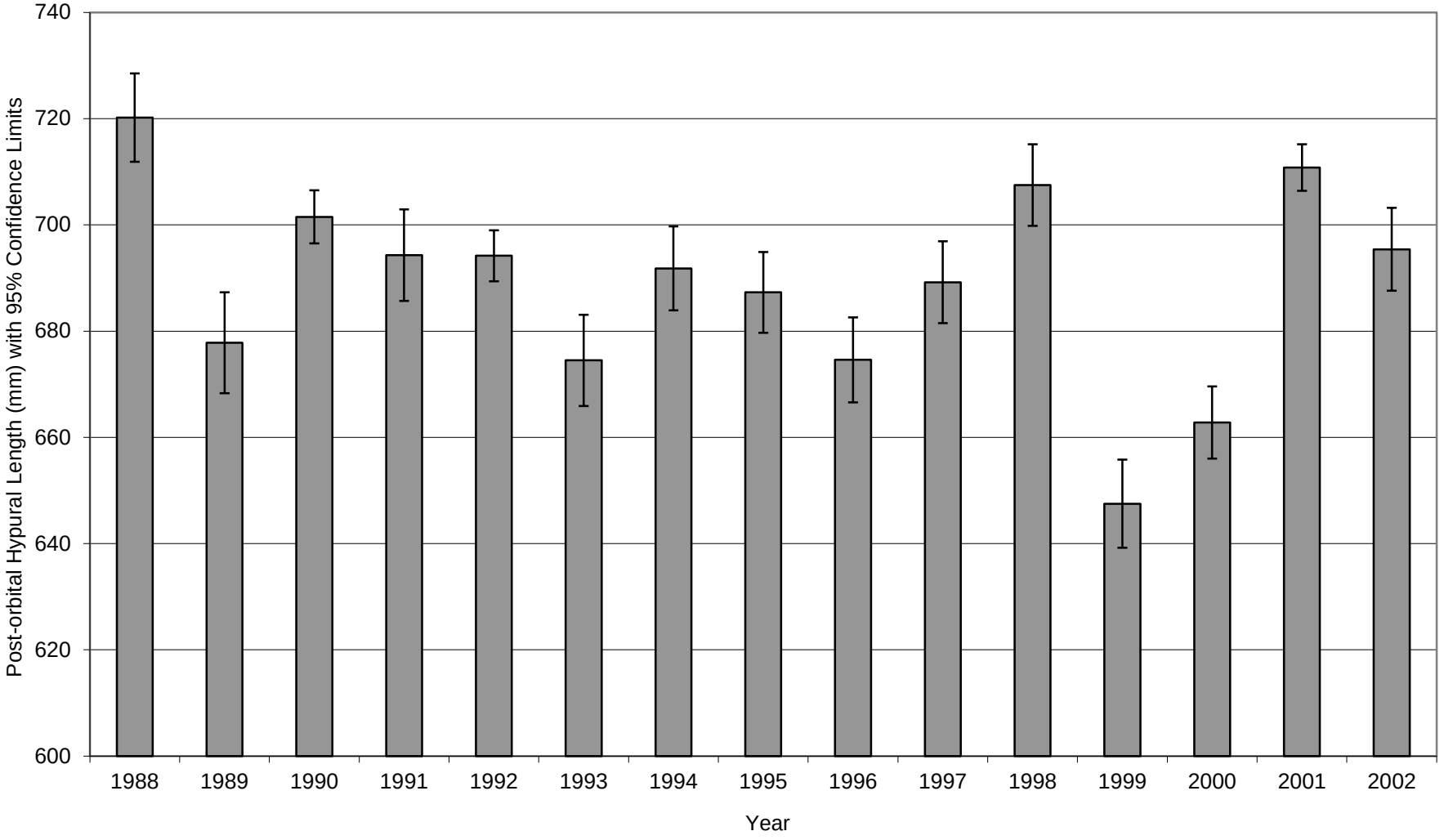
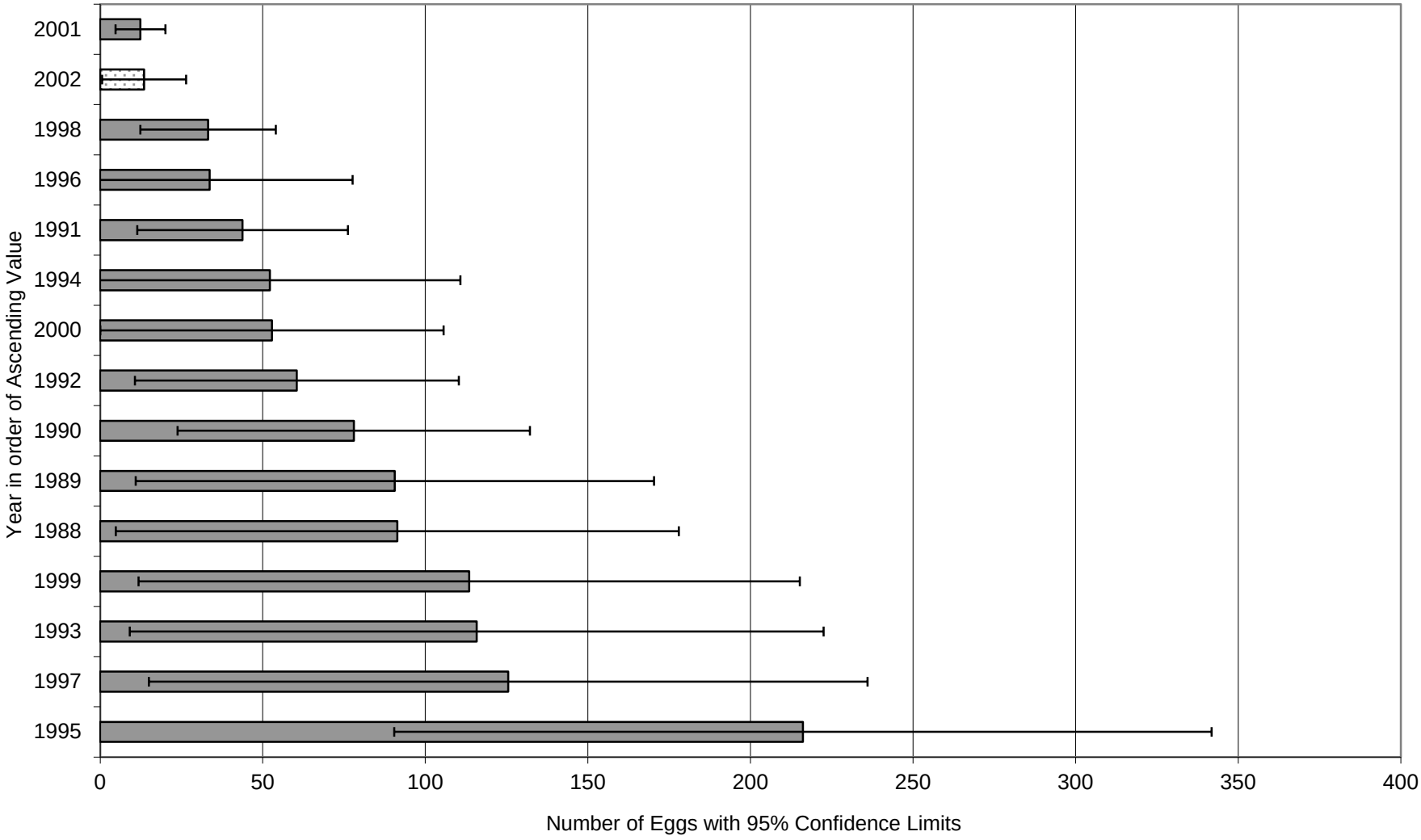


Figure 9
Nechako River Chinook Mean Egg retention, 1988-2002



Appendix 1. Nechako River Carcass Data

Carcass #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs	Scale Samples Book	Scale Samples Spaces	Age (G-R)	Comments
1	13-Sep-02	3B	F	4	675	0	88335	1	52	
2	16-Sep-02	12	F	3	747	0	88335	2	52	
3	16-Sep-02	12	F	1	642	0	88335	3	2M	RG
4	16-Sep-02	12	F	2	713	2	88335	4	52	
5	19-Sep-02	3B	M	1	775		88335	5	52	
6	19-Sep-02	3B	M	2	738		88336	1	3M	RG
7	19-Sep-02	3B	F	1	735	2	88336	2	52	
8	19-Sep-02	3B	M	1	800		88336	3	52	Fork Length 1016
9	19-Sep-02	3B	F	2	781	5	88336	4	62	
10	19-Sep-02	3B	F	3	668	3	88336	5	52	
11	19-Sep-02	3B	F	3	792	3	88337	1	52	
12	19-Sep-02	3B	F	3	656	4	88337	2	41	
13	19-Sep-02	3B	F	1	685	0	88337	3	52	
14	19-Sep-02	3B	M	1	596		88337	4	42	
15	19-Sep-02	3B	M	2	590		88337	5	42	
16	19-Sep-02	3B	F	2	752	31	88338	1	52	
17	19-Sep-02	3B	F	3	770	1	88338	2	62	
18	19-Sep-02	3B	M	3	743		88338	3	4M	RG
19	19-Sep-02	3B	F	1	699	0	88338	4	52	
20	19-Sep-02	3B	F	3	666	0	88338	5	52	
21	20-Sep-02	4	M	2	847		88339	1	62	Fork Length 1092
22	20-Sep-02	4	M	3	767		88339	2	52	
23	20-Sep-02	4	F	1	569	3	88339	3	42	
24	20-Sep-02	4	M	1	767		88339	4	51	
25	20-Sep-02	4	F	2	683	1	88339	5	52	
26	20-Sep-02	5	F	1	687	0	88340	1	52	
27	20-Sep-02	5	M	3	754		88340	2	52	
28	20-Sep-02	5	F	1	747	2	88340	3	52	
29	20-Sep-02	6	F	1	725	18	88340	4	52	
30	20-Sep-02	6	M	3	751		88340	5	52	
31	21-Sep-02	9	F	1	595	0	88341	1	42	
32	21-Sep-02	9	F	3	713	1	88341	2	42	
33	21-Sep-02	9	F	1	717	5	88341	3	52	

Appendix 1. Nechako River Carcass Data

34	21-Sep-02	9	M	3	638		88341	4	42	
35	21-Sep-02	9	F	2	675	119	88341	5	52	
36	21-Sep-02	9	M	1	774		88342	1	52	Fork Length 1012
37	21-Sep-02	9	M	2	747		88342	2	52	
38	21-Sep-02	9	F	3	707	53	88342	3	4M	RG
39	21-Sep-02	9	M	2	723		88342	4	52	
40	21-Sep-02	9	F	2	688	1	88342	5	3M	RG
41	23-Sep-02	16	F	1	637	16	88343	1	42	
42	25-Sep-02	3A	M	2	752		88343	2	52	
43	25-Sep-02	3A	F	2	719	0	88343	3	52	
44	25-Sep-02	3A	M	1	758		88343	4	52	
45	25-Sep-02	3A	F	2	689	59	88343	5	3M	RG
46	25-Sep-02	3A	F	2	750	0	88344	1	3M	RG
47	25-Sep-02	3A	F	3	675	46	88344	2	52	
48	25-Sep-02	3A	M	3	788		88344	3	52	
49	25-Sep-02	3A	F	3	723	0	88344	4	52	
50	25-Sep-02	3A	F	2	716	2	88344	5	52	
51	25-Sep-02	3A	F	3	683	0	88345	1	52	
52	25-Sep-02	3A	M	2	781		88345	2	52	
53	25-Sep-02	3A	M	3	790		88345	3	52	
54	25-Sep-02	3A	F	2	731	3	88345	4	52	
55	25-Sep-02	3A	F	3	602	0	88345	5	42	
56	25-Sep-02	3A	F	2	657	4	88346	1	3M	RG
57	25-Sep-02	3A	M	3	781		88346	2	52	
58	25-Sep-02	3A	M	3	755		88346	3	3M	RG
59	25-Sep-02	3A	M	2	688		88346	4	52	
60	25-Sep-02	3A	F	1	743	2	88346	5	S2	RS
61	25-Sep-02	3A	F	1	740	0	88347	1	52	
62	25-Sep-02	3A	M	1	722		88347	2	52	
63	25-Sep-02	3A	F	2	724	2	88347	3	52	
64	25-Sep-02	3A	F	2	743	9	88347	4	52	
65	25-Sep-02	3A	F	2	707	1	88347	5	3M	RG
66	25-Sep-02	3B	F	1	681	1	88348	1	52	
67	25-Sep-02	3B	F	1	726	3	88348	2	52	
68	25-Sep-02	3B	F	2	715	2	88348	3	52	
69	25-Sep-02	3B	F	1	696	17	88348	4	52	

Appendix 1. Nechako River Carcass Data

70	25-Sep-02	3B	M	1	762		88348	5	52	
71	26-Sep-02	3B	M	1	780		88349	1	52	
72	26-Sep-02	3B	F	2	677	17	88349	2	52	
73	26-Sep-02	3B	M	1	785		88349	3	3M	RG
74	26-Sep-02	3B	F	1	647	5	88349	4	42	
75	26-Sep-02	3B	M	2	762		88349	5	52	
76	26-Sep-02	3B	F	3	682	2	88350	1	52	
77	26-Sep-02	3B	F	3	717	0	88350	2	52	
78	26-Sep-02	3B	F	1	734	4	88350	3	S2	RS
79	26-Sep-02	3B	F	4	720	0	88350	4	3M	RG
80	26-Sep-02	3B	M	2	761		88350	5	52	
81	26-Sep-02	3B	F	2	743	0	88351	1	52	
82	26-Sep-02	3B	M	1	615		88351	2	42	
83	26-Sep-02	3B	F	2	710	0	88351	3	52	
84	26-Sep-02	3B	M	1	715		88351	4	3M	RG
85	26-Sep-02	3B	F	3	682	1	88351	5	3M	RG
86	26-Sep-02	3B	F	1	695	0	88352	1	3M	RG
87	26-Sep-02	3B	M	1	696		88352	2	52	
88	26-Sep-02	3B	M	3	761		88352	3	52	
89	26-Sep-02	3B	F	1	655	0	88352	4	52	
90	26-Sep-02	3B	M	3	695		88352	5	52	
91	26-Sep-02	4	F	1	663	7	88353	1	52	
92	26-Sep-02	4	M	3	755		88353	2	52	
93	26-Sep-02	4	M	3	771		88353	3	52	Fork Length 1002
94	26-Sep-02	4	M	2	578		88353	4	42	
95	26-Sep-02	4	F	3	732	0	88353	5	52	
96	26-Sep-02	4	F	3	663	0	88354	1	52	
97	26-Sep-02	4	F	1	747	0	88354	2	52	
98	26-Sep-02	4	M	2	823		88354	3	62	Fork Length 1062
99	26-Sep-02	4	F	1	705	1	88354	4	3M	RG
100	26-Sep-02	4	M	3	774		88354	5	52	
101	26-Sep-02	4	M	2	603		88355	1	42	
102	26-Sep-02	4	M	1	744		88355	2	41	
103	26-Sep-02	4	M	3	742		88355	3	52	
104	26-Sep-02	4	F	1	634	2	88355	4	42	
105	26-Sep-02	4	M	3	650		88355	5	42	

Appendix 1. Nechako River Carcass Data

106	26-Sep-02	4	M	2	781		88356	1	3M	RG
107	26-Sep-02	4	F	2	690	16	88356	2	52	
108	26-Sep-02	4	F	3	723	0	88356	3	3M	suspected clip but no CWT; RG
109	26-Sep-02	4	M	3	826		88356	4	52	Fork Length 1072
110	26-Sep-02	4	M	1	610		88356	5	42	
111	27-Sep-02	5	M	1	365		88357	1	32	Jack
112	27-Sep-02	5	F	3	747	5	88357	2	52	
113	27-Sep-02	5	F	3	745	0	88357	3	52	
114	27-Sep-02	5	M	3	731		88357	4	52	
115	27-Sep-02	5	F	4	674	1	88357	5	52	
116	27-Sep-02	5	F	3	717	15	88358	1	52	
117	27-Sep-02	5	F	2	701	2	88358	2	52	
118	27-Sep-02	5	F	3	703	0	88358	3	52	
119	27-Sep-02	5	F	3	697	3	88358	4	52	
120	27-Sep-02	5	F	2	726	3	88358	5	52	
121	27-Sep-02	5	F	2	717	59	88359	1	52	
122	27-Sep-02	5	M	3	842		88359	2	62	Fork Length 1065
123	27-Sep-02	5	F	2	719	1	88359	3	52	
124	27-Sep-02	5	M	3	765		88359	4	52	
125	27-Sep-02	5	F	3	722	0	88359	5	52	
126	27-Sep-02	5	F	2	736	813	88360	1	52	Crinkle Back
127	27-Sep-02	5	F	4	750	0	88360	2	42	
128	27-Sep-02	5	M	1	777		88360	3	52	
129	27-Sep-02	5	M	2	626		88360	4	42	
130	27-Sep-02	5	F	2	703	3	88360	5	52	
131	27-Sep-02	6	F	1	728	1	88361	1	52	
132	27-Sep-02	6	F	3	720	2	88361	2	42	
133	27-Sep-02	6	M	2	829		88361	3	52	Fork Length 1066
134	27-Sep-02	6	F	1	688	291	88361	4	52	
135	27-Sep-02	6	F	1	715	94	88361	5	52	
136	27-Sep-02	6	M	1	823		88362	1	52	
137	27-Sep-02	6	M	3	792		88362	2	52	
138	27-Sep-02	6	M	3	851		88362	3	62	Fork Length 1099
139	27-Sep-02	6	F	3	727	0	88362	4	42	Partially eaten
140	27-Sep-02	6	F	1	649	2	88362	5	52	
141	27-Sep-02	6	F	3	655	0	88363	1	41	

Appendix 1. Nechako River Carcass Data

142	27-Sep-02	6	F	1	713	0	88363	2	52	
143	27-Sep-02	6	M	1	743		88363	3	52	
144	27-Sep-02	6	M	3	782		88363	4	52	
145	27-Sep-02	6	M	2	711		88363	5	52	
146	27-Sep-02	6	F	3	640	0	88364	1	42	
147	27-Sep-02	6	F	4	697	0	88364	2	52	
148	27-Sep-02	6	F	1	625	0	88364	3	42	
149	27-Sep-02	6	M	2	816		88364	4	52	Fork Length 1037
150	27-Sep-02	6	M	3	803		88364	5	3M	RG
151	28-Sep-02	11	M	3	851		88365	1	52	Fork Length 1095
152	28-Sep-02	11	F	1	765	4	88365	2	52	
153	28-Sep-02	11	M	1	709		88365	3	52	
154	28-Sep-02	12	F	1	693	6	88365	4	42	
155	28-Sep-02	12	F	4	700	0	88365	5	3M	RG
156	28-Sep-02	12	F	2	686	0	88366	1	52	
157	28-Sep-02	12	F	1	617	0	88366	2	42	
158	28-Sep-02	12	F	4	717	0	88366	3	52	
159	28-Sep-02	12	F	4	722	0	88366	4	S2	RS
160	28-Sep-02	12	F	1	710	0	88366	5	42	
161	29-Sep-02	11	F	4	628	0	88367	1	52	
162	29-Sep-02	11	F	1	765	0	88367	2	3M	RG
163	29-Sep-02	12	F	3	712	6	88367	3	52	
164	29-Sep-02	12	F	3	661	2	88367	4	2M	RG
165	29-Sep-02	12	F	4	722	0	88367	5	52	
166	29-Sep-02	12	M	4	588		88368	1	42	
167	29-Sep-02	12	F	3	725	0	88368	2	52	
168	29-Sep-02	12	M	3	791		88368	3	52	
169	29-Sep-02	12	F	2	750	0	88368	4	52	
170	29-Sep-02	12	F	2	639	0	88368	5	42	
171	29-Sep-02	13	M	3	792		88369	1	52	
172	29-Sep-02	13	M	4	772		88369	2	52	
173	29-Sep-02	13	F	3	706	0	88369	3	52	
174	29-Sep-02	13	F	4	737	0	88369	4	52	
175	29-Sep-02	13	F	2	614	0	88369	5	42	
176	29-Sep-02	13	M	3	790		88370	1	52	
177	29-Sep-02	13	M	4	622		88370	2	42	

Appendix 1. Nechako River Carcass Data

178	29-Sep-02	13	F	3	568	0	88370	3	42	
179	29-Sep-02	12	F	2	615	0	88370	4	42	
180	29-Sep-02	12	F	4	546	0	88370	5	42	
181	30-Sep-02	9	F	2	790	0	88371	1	52	Severe abdominal swelling
182	30-Sep-02	9	M	2	835		88371	2	52	Fork Length 1069
183	30-Sep-02	9	F	2	701	0	88371	3	52	
184	30-Sep-02	9	M	2	861		88371	4	62	Fork Length 1117
185	30-Sep-02	9	F	2	708	0	88371	5	52	
186	30-Sep-02	9	F	3	698	0	88372	1	3M	RG
187	30-Sep-02	9	M	1	789		88372	2	52	
188	30-Sep-02	9	M	3	628		88372	3	42	
189	30-Sep-02	9	F	2	704	3	88372	4	S2	RS
190	30-Sep-02	9	F	1	616	4	88372	5	52	
191	4-Oct-02	15	F	4	611	0	88373	1	42	
192	4-Oct-02	15	F	4	613	0	88373	2	42	
193	4-Oct-02	15	M	4	599		88373	3	42	
194	4-Oct-02	15	F	4	612	0	88373	4	42	
195	4-Oct-02	15	F	4	672	0	88373	5	52	Partially eaten
196	5-Oct-02	9	F	2	684	0	88374	1	52	
197	5-Oct-02	9	F	4	671	0	88374	2	52	
198	5-Oct-02	9	F	3	735	0	88374	3	52	
199	5-Oct-02	9	F	4	682	0	88374	4	52	
200	5-Oct-02	9	F	4	699	0	88374	5	52	
201	5-Oct-02	9	F	4	667	0	88285	1	52	
202	5-Oct-02	9	F	4	705	0	88285	2	3M	RG
203	5-Oct-02	9	F	4	775	0	88285	3	52	
204	5-Oct-02	9	F	4	672	0	88285	4	42	
205	5-Oct-02	9	F	4	659	0	88285	5	52	
206	5-Oct-02	9	F	3	698	0	88286	1	52	
207	5-Oct-02	9	F	4	735	0	88286	2	3M	RG

Appendix 2.Stuart River Carcass Data

Carcass #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs	Scale Samples Book	Spaces	Age (G-R)	Comments
1	22-Sep-02	1	M	1	780		88375	1	52	
2	22-Sep-02	2	M	2	810		88375	2	52	
3	22-Sep-02	2	M	2	790		88375	3	52	
4	22-Sep-02	2	F	1	730	0	88375	4	52	
5	22-Sep-02	2	F	2	760	10	88375	5	52	
6	22-Sep-02	3	F	2	690	0	88376	1	42	RG
7	22-Sep-02	3	F	2	740	0	88376	2	42	
8	22-Sep-02	3	M	1	810		88376	3	2M	RG
9	22-Sep-02	3	M	2	800		88376	4	2M	RG
10	22-Sep-02	3	F	3	740	20	88376	5	3M	RG
11	23-Sep-02	4	F	2	670	12	88378	1	42	
12	23-Sep-02	4	F	2	660	12	88378	2	42	
13	23-Sep-02	4	F	2	741	0	88378	3	42	
14	23-Sep-02	4	M	1	614		88378	4	42	
15	23-Sep-02	4	M	2	602		88378	5	42	
16	23-Sep-02	4	M	2	638		88377	1	2M	RG
17	23-Sep-02	4	F	3	580	6	88377	2	n/a	UD
18	23-Sep-02	4	M	2	650		88377	3	2M	RG
19	23-Sep-02	4	M	2	754		88377	4	n/a	UD
20	23-Sep-02	4	F	2	582	0	88377	5	n/a	UD
21	23-Sep-02	4	F	2	744	2	88379	1	2M	RG
22	23-Sep-02	4	M	2	630		88379	2	2M	RG
23	23-Sep-02	4	M	2	702		88379	3	2M	RG
24	23-Sep-02	4	M	3	805		88379	4	n/a	UD
25	23-Sep-02	4	M	2	685		88379	5	53	
26	23-Sep-02	4	F	1	648	0	88380	1	42	Found tag 1107 eaten on shore
27	23-Sep-02	4	F	3	739	8	88380	2	52	
28	23-Sep-02	4	F	2	624	0	88380	3	42	
29	23-Sep-02	4	M	3	561		88380	4	42	
30	23-Sep-02	4	F	1	718	0	88380	5	63	
31	23-Sep-02	4	F	1	707	0	88381	1	52	
32	23-Sep-02	4	F	1	648	0	88381	2	42	
33	23-Sep-02	4	M	1	645		88381	3	42	

Carcass					POHL		Scale Samples		Age		
34	23-Sep-02	4	M	2	763		88381	4	52		
35	23-Sep-02	4	M	2	603		88381	5	42		
36	23-Sep-02	4	M	2	826		88382	1	3M	Loose seal on scale book; RG	
37	23-Sep-02	4	M	2	598		88382	2	2M		RG
38	23-Sep-02	4	M	1	590		88382	3	42		
39	23-Sep-02	4	M	2	688		88382	4	42		
40	23-Sep-02	4	F	3	745	22	88382	5	52		
41	23-Sep-02	5	M	3	685		88383	1	52		
42	23-Sep-02	5	M	3	837		88383	2	52		
43	23-Sep-02	5	F	3	745	1	88383	3	52		
44	23-Sep-02	6	M	2	714		88383	4	52		
45	23-Sep-02	6	F	2	758	5	88383	5	42		
46	23-Sep-02	6	M	2	603		88384	1	n/a		UD
47	23-Sep-02	6	M	2	650		88384	2	42		
48	23-Sep-02	6	M	2	680		88384	3	2M		RG
49	23-Sep-02	6	M	2	633		88384	4	n/a		UD
50	23-Sep-02	6	M	1	642		88384	5	2M		RG
51	23-Sep-02	6	M	3	653		88385	1	42		
52	24-Sep-02	2	F	3	620	0	88385	2	42		
53	24-Sep-02	2	M	3	740		88385	3	42		
54	24-Sep-02	3	F	2	640	80	88385	4	42		
55	24-Sep-02	3	M	3	800		88385	5	53		
56	24-Sep-02	2	M	3	630		88386	1	42		
57	24-Sep-02	2	F	2	635	0	88386	2	42		
58	24-Sep-02	2	F	2	740	0	88386	3	S2		UM
59	24-Sep-02	2	F	2	780	25	88386	4	n/a		UD
60	24-Sep-02	3	F	2	750	0	88386	5	52		
61	24-Sep-02	3	F	2	640	0	88387	1	42		
62	24-Sep-02	3	F	3	690	0	88387	2	42		
63	24-Sep-02	3	F	3	570	0	88387	3	2M		RG
64	24-Sep-02	3	F	3	680	6	88387	4	52		
65	24-Sep-02	3	M	2	620		88387	5	42		
66	24-Sep-02	3	F	3	680	1	88388	1	n/a		UD
67	24-Sep-02	3	F	2	730	12	88388	2	n/a		UD
68	24-Sep-02	3	F	2	570	90	88388	3	n/a		UD
69	24-Sep-02	3	F	2	630	0	88388	4	2M		RG

Carcass					POHL		Scale Samples		Age	
70	24-Sep-02	3	F	2	650	0	88388	5	S2	UM
71	24-Sep-02	3	F	3	770	2	88389	1	52	
72	24-Sep-02	3	F	3	610	0	88389	2	2M	RG
73	24-Sep-02	4	M	3	780		88389	3	42	
74	24-Sep-02	4	M	3	780		88389	4	52	
75	24-Sep-02	4	F	3	620	0	88389	5	42	
76	24-Sep-02	4	F	3	650	20	88390	1	32	
77	24-Sep-02	4	F	3	800	1	88390	2	S2	UM
78	24-Sep-02	4	F	2	680	1	88390	3	42	
79	24-Sep-02	4	M	3	690		88390	4	n/a	UD
80	24-Sep-02	4	F	2	660	0	88390	5	2M	RG
81	24-Sep-02	4	F	2	620	37	88391	1	42	
82	24-Sep-02	4	F	3	730	0	88391	2	42	
83	24-Sep-02	4	F	2	750	2	88391	3	52	
84	24-Sep-02	4	M	3	620		88391	4	42	
85	24-Sep-02	4	M	3	680		88391	5	42	
86	24-Sep-02	4	F	3	660	2	88392	1	42	
87	24-Sep-02	4	F	2	640	0	88392	2	42	
88	24-Sep-02	4	M	3	630		88392	3	42	
89	24-Sep-02	4	F	2	700	8	88392	4	42	
90	24-Sep-02	4	F	2	690	30	88392	5	42	
91	24-Sep-02	4	M	3	630		88393	1	42	
92	25-Sep-02	4	M	3	780		88393	2	n/a	RS
93	25-Sep-02	4	M	3	840		88393	3	n/a	UD
94	25-Sep-02	5	F	2	660	0	88393	4	n/a	UD
95	25-Sep-02	6	M	3	690		88393	5	n/a	UD
96	25-Sep-02	4	F	2	600	45	88394	1	2M	RG
97	25-Sep-02	4	F	2	650	2	88394	2	42	
98	25-Sep-02	4	F	3	700	0	88394	3	52	
99	25-Sep-02	5	M	3	710		88394	4	52	
100	25-Sep-02	5	M	3	650		88394	5	42	
101	25-Sep-02	6	M	3	580		88395	1	42	
102	25-Sep-02	6	F	3	690	0	88395	2	42	
103	25-Sep-02	6	M	3	830		88395	3	63	
104	25-Sep-02	6	M	3	590		88395	4	42	
105	25-Sep-02	6	M	3	600		88395	5	42	

Carcass					POHL		Scale Samples		Age	
106	25-Sep-02	6	M	3	660		88396	1	n/a	UD
107	25-Sep-02	6	F	3	770	3	88396	2	n/a	UD
108	25-Sep-02	6	M	3	660		88396	3	n/a	UD
109	25-Sep-02	2	M	3	660		88396	4	42	
110	26-Sep-02	3	F	3	680	25	88396	5	52	
111	26-Sep-02	3	M	2	800		88397	1	52	
112	26-Sep-02	3	M	2	740		88397	2	63	
113	26-Sep-02	3	M	2	690		88397	3	42	
114	26-Sep-02	3	F	2	700	0	88397	4	42	
115	26-Sep-02	3	M	3	870		88397	5	42	
116	26-Sep-02	3	F	3	650	0	88398	1	42	
117	26-Sep-02	3	F	2	730	10	88398	2	52	
118	26-Sep-02	3	F	2	700	0	88398	3	42	
119	26-Sep-02	3	M	3	680		88398	4	42	
120	26-Sep-02	3	M	3	650		88398	5	42	
121	26-Sep-02	3	M	3	660		88399	1	42	
122	26-Sep-02	3	F	3	660	0	88399	2	42	
123	27-Sep-02	4	F	3	650	5	88399	3	42	
124	27-Sep-02	4	M	3	830		88399	4	42	
125	27-Sep-02	4	F	3	640	0	88399	5	2M	RG
126	27-Sep-02	4	F	3	610	0	88400	1	n/a	UD
127	27-Sep-02	4	M	2	830		88400	2	n/a	UD
128	27-Sep-02	4	F	3	630	20	88400	3	2M	RG
129	27-Sep-02	4	F	2	620	0	88400	4	2M	RG
130	27-Sep-02	4	F	3	690	1	88400	5	n/a	UD
131	27-Sep-02	4	F	2	720	1	88401	1	n/a	UD
132	27-Sep-02	4	M	3	790		88401	2	n/a	UD
133	27-Sep-02	4	F	2	670	0	88401	3	n/a	UD
134	27-Sep-02	4	F	4	660	1500	88401	4	n/a	UD
135	27-Sep-02	4	F	2	680	0	88401	5	n/a	UD
136	27-Sep-02	4	F	2	740	0	88402	1	n/a	UD
137	27-Sep-02	4	F	3	750	20	88402	2	n/a	UD
138	27-Sep-02	4	F	2	620	0	88402	3	n/a	UD
139	27-Sep-02	4	F	2	640	15	88402	4	n/a	UD
140	27-Sep-02	4	F	3	600	0	88402	5	n/a	UD
141	27-Sep-02	4	M	3	660		88403	1	42	

Carcass					POHL		Scale Samples		Age	
142	27-Sep-02	4	F	2	670	0	88403	2	52	
143	27-Sep-02	4	M	3	650		88403	3	42	
144	27-Sep-02	4	M	3	520		88403	4	42	
145	27-Sep-02	4	F	3	700	0	88403	5	42	
146	27-Sep-02	4	F	2	680	0	88404	1	42	
147	27-Sep-02	4	F	3	650	0	88404	2	42	
148	27-Sep-02	4	M	3	700		88404	3	42	
149	28-Sep-02	6	M	2	820		88404	4	52	
150	28-Sep-02	6	M	3	680		88404	5	42	
151	28-Sep-02	6	M	2	640		88405	1	n/a	UD
152	28-Sep-02	6	F	3	620	0	88405	2	n/a	UD
153	28-Sep-02	6	M	2	580		88405	3	n/a	UD
154	28-Sep-02	5	F	3	660	0	88405	4	n/a	UD
155	28-Sep-02	5	F	3	640	0	88405	5	n/a	UD
156	28-Sep-02	6	F	3	680	0	88406	1	42	
157	28-Sep-02	6	F	2	620	0	88406	2	42	
158	28-Sep-02	6	M	3	730		88406	3	52	
159	29-Sep-02	2	F	2	656	0	88406	4	42	
160	29-Sep-02	2	M	2	697		88406	5	42	
161	29-Sep-02	2	M	3	738		88407	1	3M	RG
162	29-Sep-02	2	F	3	650	0	88407	2	n/a	UD
163	29-Sep-02	2	F	2	783	6	88407	3	n/a	UD
164	29-Sep-02	3	F	2	680	0	88407	4	42	
165	29-Sep-02	3	F	2	644	0	88407	5	42	
166	29-Sep-02	3	F	3	609	0	88408	1	52	
167	29-Sep-02	3	M	2	660		88408	2	42	
168	29-Sep-02	3	M	2	675		88408	3	42	
169	29-Sep-02	3	M	3	788		88408	4	52	
170	29-Sep-02	3	F	2	600	2	88408	5	2M	RG
171	29-Sep-02	3	F	3	605	0	88409	1	42	
172	29-Sep-02	3	M	2	570		88409	2	42	
173	29-Sep-02	3	M	3	685		88409	3	42	
174	29-Sep-02	3	F	2	755	0	88409	4	52	
175	29-Sep-02	3	M	3	650		88409	5	42	
176	29-Sep-02	3	M	3	580		88410	1	42	
177	30-Sep-02	4	M	3	690		88410	2	42	

Carcass					POHL		Scale Samples		Age	
178	30-Sep-02	4	F	3	710	0	88410	3	52	
179	30-Sep-02	4	F	3	680	6	88410	4	42	
180	30-Sep-02	4	F	2	610	6	88410	5	42	
181	30-Sep-02	4	F	3	700	0	88411	1	42	
182	30-Sep-02	4	M	3	600		88411	2	42	
183	30-Sep-02	4	F	3	610	1	88411	3	53	
184	30-Sep-02	4	F	3	700	3	88411	4	52	
185	30-Sep-02	4	M	3	630		88411	5	2M	RG
186	30-Sep-02	4	M	4	770		88412	1	52	
187	30-Sep-02	4	F	3	690	6	88412	2	42	
188	30-Sep-02	5	F	2	640	2	88412	3	42	
189	30-Sep-02	6	M	3	600		88412	4	42	
190	30-Sep-02	6	F	4	650	8	88412	5	42	
191	30-Sep-02	5	F	3	640	22	88413	1	42	
192	30-Sep-02	5	F	3	640	7	88413	2	42	
193	30-Sep-02	6	M	3	740		88413	3	52	
194	30-Sep-02	6	F	3	690	28	88413	4	42	
195	1-Oct-02	2	M	2	550		88413	5	42	
196	1-Oct-02	3	F	3	750	20	88414	1	42	
197	1-Oct-02	3	F	2	650	0	88414	2	42	
198	1-Oct-02	1	M	2	730		88414	3	42	
199	1-Oct-02	2	M	3	640		88414	4	42	
200	1-Oct-02	2	M	3	660		88414	5	42	
201	24-Sep-01	3	F	3	770	2	78990	2	52	
202	24-Sep-01	3	F	4	760	0	78990	3	42	
203	24-Sep-01	3	F	3	755	0	78990	4	52	
204	24-Sep-01	3	F	3	670	4	78990	5	52	
205	24-Sep-01	3	M	3	750		78991	1	52	
206	24-Sep-01	3	F	4	740	0	78991	2	42	
207	24-Sep-01	3	M	3	800		78991	3	63	
208	24-Sep-01	3	M	3	760		78991	4	52	
209	24-Sep-01	3	F	3	790	1	78991	5	52	
210	24-Sep-01	3	F	4	737	0	78992	1	52	
211	24-Sep-01	3	F	3	625	0	78992	2	42	
212	24-Sep-01	3	F	3	725	0	78992	3	52	
213	24-Sep-01	3	F	3	718	3	78992	4	52	

Carcass					POHL		Scale Samples		Age	
214	24-Sep-01	3	F	3	695	6	78992	5	52	
215	24-Sep-01	3	M	3	744		78993	1	52	
216	24-Sep-01	3	F	4	754	0	78993	2	52	
217	24-Sep-01	3	F	3	750	30	78993	3	52	
218	24-Sep-01	3	F	3	720	20	78993	4	52	
219	24-Sep-01	3	F	3	670	0	78993	5	52	
220	24-Sep-01	3	F	3	710	10	78994	1	42	
221	24-Sep-01	3	F	3	700	0	78994	2	52	
222	24-Sep-01	3	F	3	730	5	78994	3	52	
223	24-Sep-01	3	M	3	760		78994	4	52	
224	24-Sep-01	3	M	3	800		78994	5	52	
225	25-Sep-01	5	F	4	695	15	78995	1	52	
226	25-Sep-01	5	F	3	717	0	78995	2	52	
227	25-Sep-01	5	F	3	618	7	78995	3	42	
228	25-Sep-01	5	F	4	694	220	78995	4	52	
229	25-Sep-01	5	F	3	725	0	78995	5	52	
230	25-Sep-01	5	F	4	675	0	78996	1	52	
231	25-Sep-01	5	F	3	743	0	78996	2	52	
232	25-Sep-01	5	F	2	707	12	78996	3	52	
233	25-Sep-01	5	F	3	763	0	78996	4	52	
234	25-Sep-01	5	F	3	766	0	78996	5	3M	
235	25-Sep-01	5	M	3	792		78997	1	52	
236	25-Sep-01	5	M	3	684		78997	2	42	
237	25-Sep-01	5	M	4	718		78997	3	52	
238	25-Sep-01	5	M	3	777		78997	4	52	
239	25-Sep-01	5	M	3	743		78997	5	52	
240	25-Sep-01	5	F	4	700	0	78998	1	52	
241	25-Sep-01	5	F	3	710	0	78998	2	52	
242	25-Sep-01	5	F	3	680	0	78998	3	52	
243	25-Sep-01	5	F	4	740	0	78998	4	52	
244	25-Sep-01	5	F	3	620	0	78998	5	42	
245	26-Sep-01	6	M	4	671		78999	1	52	
246	26-Sep-01	6	M	4	711		78999	2	52	
247	26-Sep-01	6	M	3	783		78999	3	52	scales on one side
248	26-Sep-01	6	F	4	681	1	78999	4	52	scales taken on one side
249	26-Sep-01	6	F	3	715	0	78999	5	52	