NECHAKO AND STUART RIVERS
CHINOOK CARCASS RECOVERY
2005

NECHAKO FISHERIES CONSERVATION PROGRAM
Data Report No. M05-2

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ABSTRACT

In 2005 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 200 carcasses were collected on the Nechako River between September 22nd and October 7th. Nechako River Chinook carcasses recovered in 2005 exhibited similar biological characteristics to those collected from 1988 to 2004. The female to male ratio of the sample fell within the range of the existing time series, as did the post-orbital hypural length for both males and females. 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, 250 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 2005 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). 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.

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 2005 are presented in Appendices 1 and 2, respectively. Summaries of these data are provided in the respective sections below.

Nechako River

Between September 22nd and October 7th a total of 200[1] carcasses were sampled from 6 of the 16 identified Sections representing all 3 river areas – upper, middle and lower river (Table 1). The observed sex ratio was 1.67 F/M, or 62.5% females and 37.5% males (n=200). One Chinook jack was collected. Of the carcasses sampled, 69% were fresh or only a few days old (Table 2).

The length (POHL) of the fish sampled ranged from 353 to 813 mm, with a mean of 695 mm (n=75, SD=88) for males, 680 mm (n=125, SD=51) for females and 685 mm (n=200, SD=68) for all fish combined. The majority of males were between 651-800 mm long while the majority of females were between 601-750 mm in length (Figure 4).

Of the total number of female carcasses sampled (n=125), one was found to be a pre-spawn mortality with undeveloped skeins. Another sample was found to be partially spawned, based on egg retention values of between 1000 and 4999, with a retention estimate of 3000 eggs. The remaining 123 females (98%) in the sample were determined to be fully spawned, based on egg retention of less than 1000. The mean egg retention for fully spawned females was 13 eggs

[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.

(n=123, SD=70, range 0–584). When including the partially spawned female in the sample, the mean egg retention for both fully and partially spawned females was 37 eggs (n=124, SD=277, range 0–3000).

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 170 of those samples (Table 3). The results indicate that the majority of the fish sampled were of two age-classes, 5_2 (68%) and 4_2 (27%). 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=0.35).

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

Stuart River

Between September 22nd and October 5th a total of 250[2] carcasses were sampled from the six Zones (1 to 6) within the study area (Table 4). The observed sex ratio was 1.65 F/M, or 62% females and 38% males (n=250). Of the 250 carcasses with condition documented, 34% were fresh or only a few days old, while most (52%) were found to be in poor condition with some fungus (Table 5).

The length (POHL) of the fish sampled ranged from 550 to 880 mm, with a mean of 760 mm for males (n=94, SD=59), 700 mm for females (n=156, SD=51) and 723 mm (n=250, SD=61) for all fish combined. The majority of males were between 701-850 mm in length while the majority of females were between 601-800 mm long (Figure 5).

Of the total number of female carcasses sampled (n=156), none were found to be pre-spawn mortalities and none were found to be partially spawned, based on retained eggs between 1000 and 4999. Of the total number of female carcasses sampled, 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 9 eggs (n=156, SD=51, range 0–500).

[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.

Scale and fin samples from all 250 carcasses recovered from the Stuart River were sent to the Pacific Biological Station in Nanaimo for age analysis. Complete ages were determined for 204 of those samples (Table 6). The results indicate that a majority of the fish sampled were of two age-classes, 5_2 (56%) and 4_2 (42%). There were no Chinook jacks in the sample. 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=0.97).

DISCUSSION - COMPARISON TO PREVIOUS YEARS

Nechako River

A comparison of 2005 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 M04-2). 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 1.67 F/M was within the existing range (1.10-2.28) observed from 1988-2004 (Figure 6), and slightly higher than the mean of 1.60 (n=17, SD=0.33), as indicated by 95% confidence limit of 1.44-1.76.

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 2005 fell within the ranges observed in previous years (Figures 7 and 8).

No female pre-spawn mortalities were sampled resulting in no change in 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). The 2005 mean was 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 2005, age-classes 4_2 and 5_2 accounted for 95% of the return, with all stream-type fish accounting for 100% (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 M05-1).

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 2005, 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. As data from the Stuart River has proved consistent with respect to sampled biological attributes over the 17 years of this sampling program, and no consistent discrepancies between Nechako and Stuart River Chinook populations have been noted, the Stuart River component of the sampling program ceased in 2005.

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.

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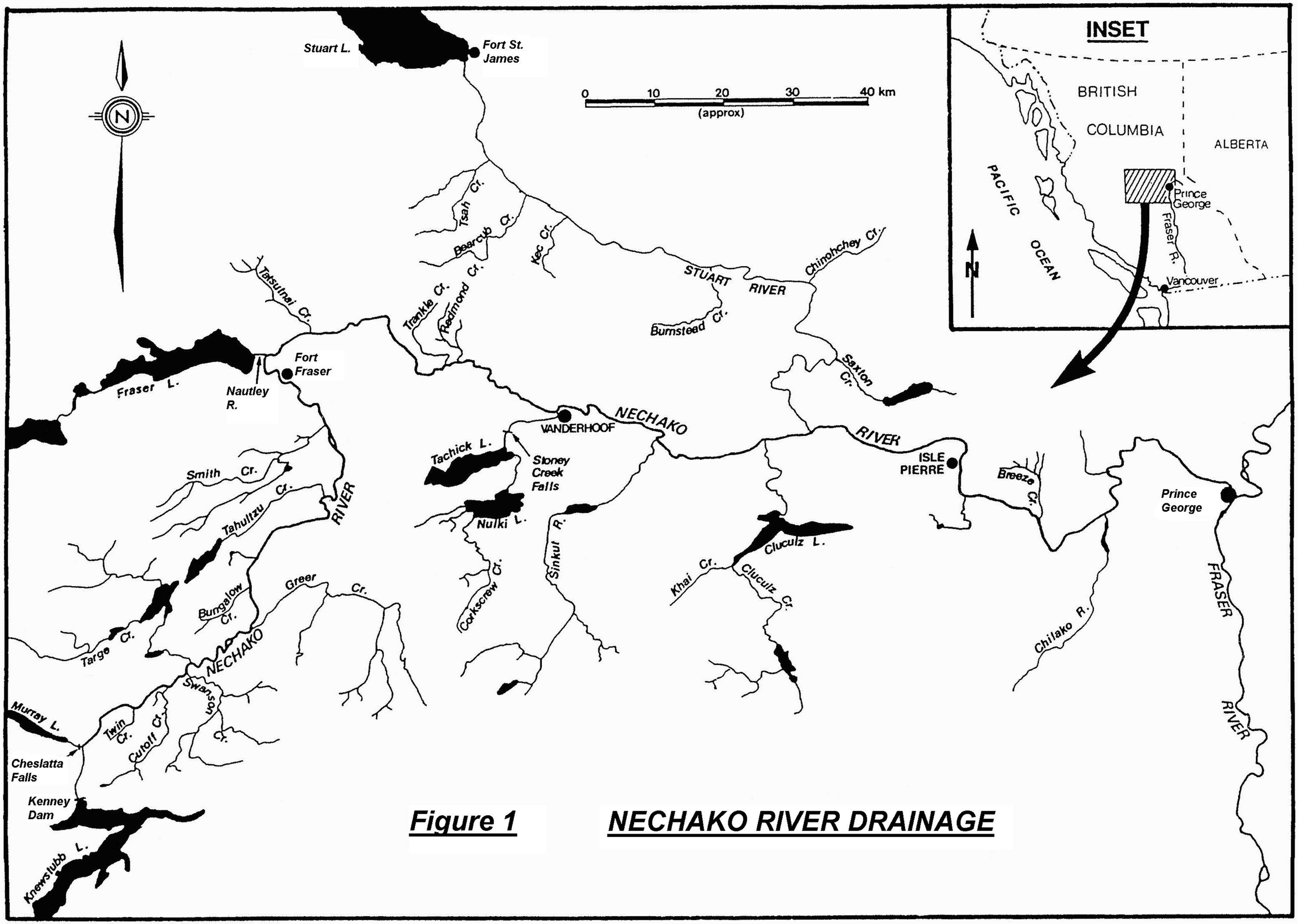


Figure 1 **NECHAKO RIVER DRAINAGE**

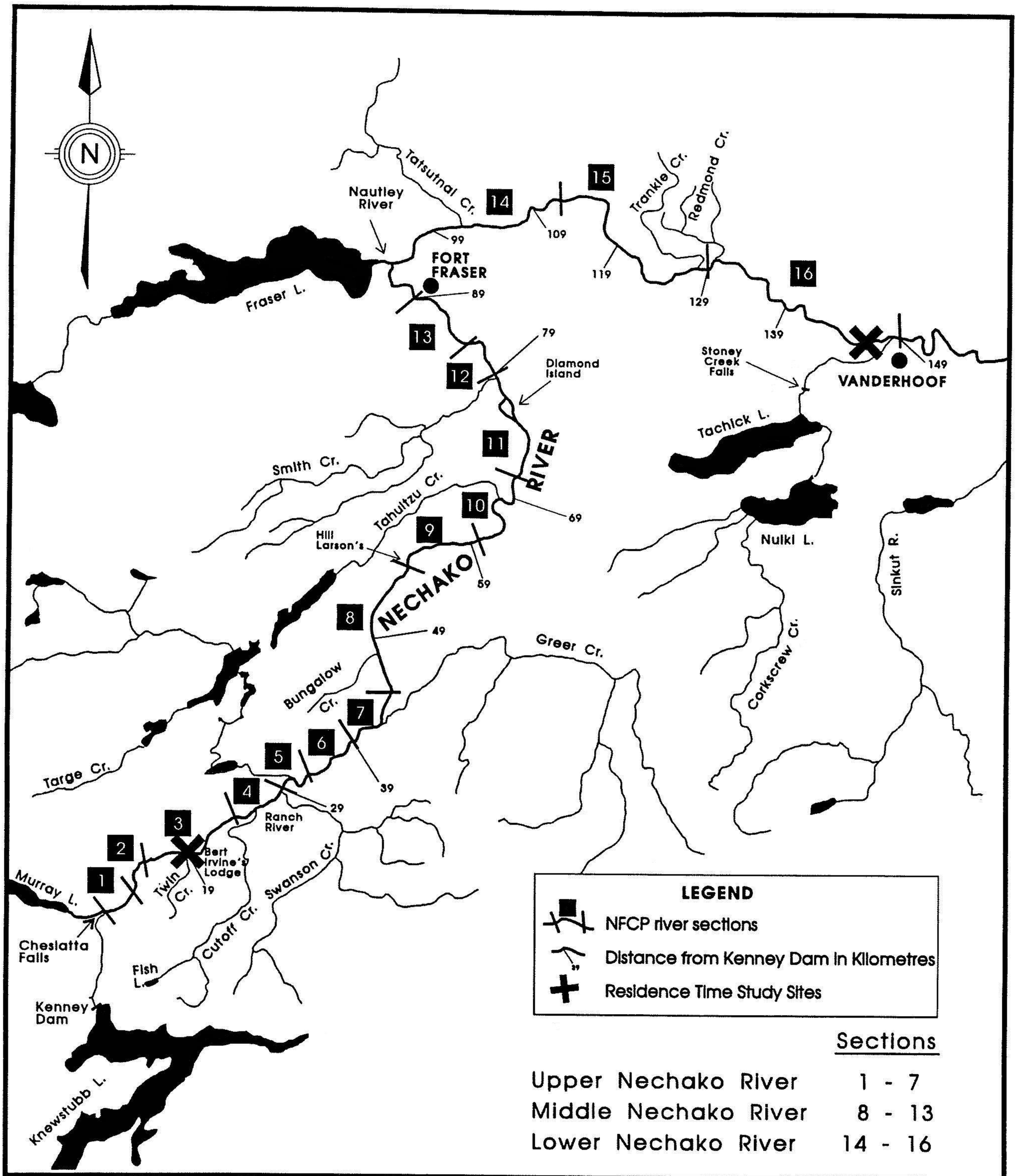


FIGURE 2. NECHAKO RIVER CHINOOK SPAWNING STUDY AREA

Figure 3

STUART RIVER CHINOOK SPAWNING STUDY AREA

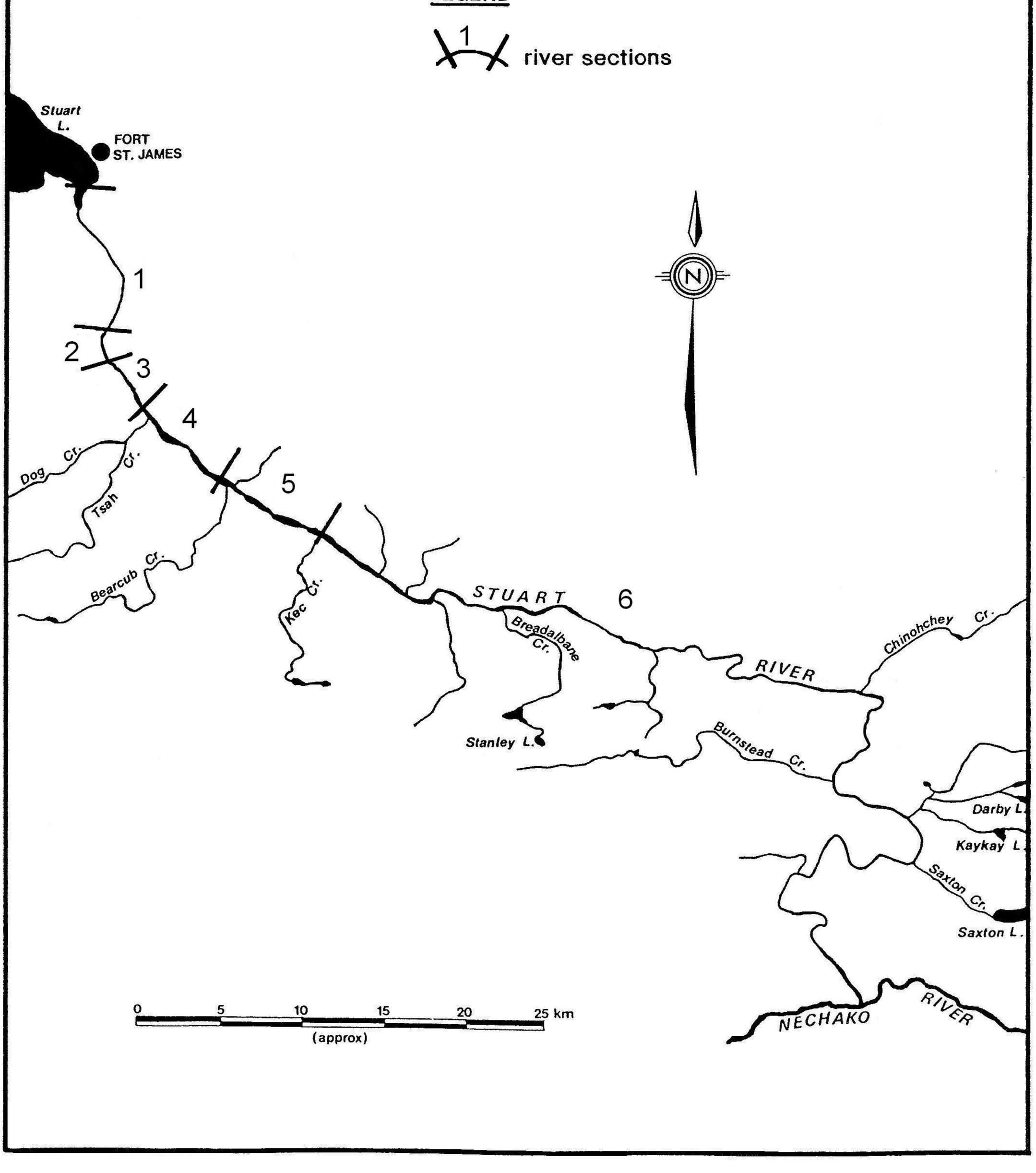


Table 1
Nechako River Chinook Carcass Recovery by Section, 2005

Section	Number	Percent
UPPER NECHAKO		
Section 1	0	0.0
Section 2	0	0.0
Section 3	83	41.5
Section 4	40	20.0
Section 5	0	0.0
Section 6	0	0.0
Section 7	0	0.0
SUB-TOTAL	123	61.5
MIDDLE NECHAKO		
Section 8	0	0.0
Section 9	0	0.0
Section 10	0	0.0
Section 11	21	10.5
Section 12	29	14.5
Section 13	0	0.0
SUB-TOTAL	50	25.0
LOWER NECHAKO		
Section 14	10	5.0
Section 15	0	0.0
Section 16	17	8.5
SUB-TOTAL	27	13.5
TOTAL RIVER	200	100.0

Table 2
Nechako River Chinook Carcass Condition, 2005

Condition *	Number	Percent
1	91	45.5
2	47	23.5
3	42	21.0
4	20	10.0
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 3
Nechako River Chinook Age Composition (%) by Sex, 2005

	3-2	4-2	5-2	6-2	6-3	Total # Aged
Males	1.5	35.4	56.9	3.1	3.1	75
Females	0.0	21.9	74.3	2.9	1.0	125

Table 4
Stuart River Chinook Carcass Recovery by Zone, 2005

Zone	Number	Percent
1	18	7.2
2	21	8.4
3	52	20.8
4	96	38.4
5	27	10.8
6	36	14.4
TOTAL	250	100.0

Table 5
Stuart River Chinook Carcass Condition, 2005

Condition *	Number	Percent
1	2	0.8
2	82	32.8
3	130	52.0
4	36	14.4
TOTAL	250	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, 2005

	4-2	5-2	6-2	6-3	Total # Aged
Males	41.6	55.8	2.6	0.0	77
Females	41.7	56.7	0.8	0.8	127

Table 7
Nechako River Chinook Fecundity, 1978-2005

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, 1988-2005

	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
2003	125	0-696	15.7	2	1100-3032	48
2004	139	0-417	6.7	0	n/a	6.7
2005	123	0-584	13.2	1	3000	37.3

Table 9
Percent Contribution of Stream-type Life Histories
to Nechako Chinook Escapements, 1988-2005

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
2003	96	100	164
2004	98	100	169
2005	95	100	170

Table 10
Percent Contribution of Age-at-Return Groupings
to Nechako Chinook Escapements, 1988-2005

	% 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
2003	1.2	31.1	65.2	2.4	0.0	164
2004	0.6	37.3	60.9	1.2	0.0	169
2005	0.6	27.1	67.6	4.7	0.0	170

Figure 4
Nechako River Chinook Length Frequency Distribution, 2005

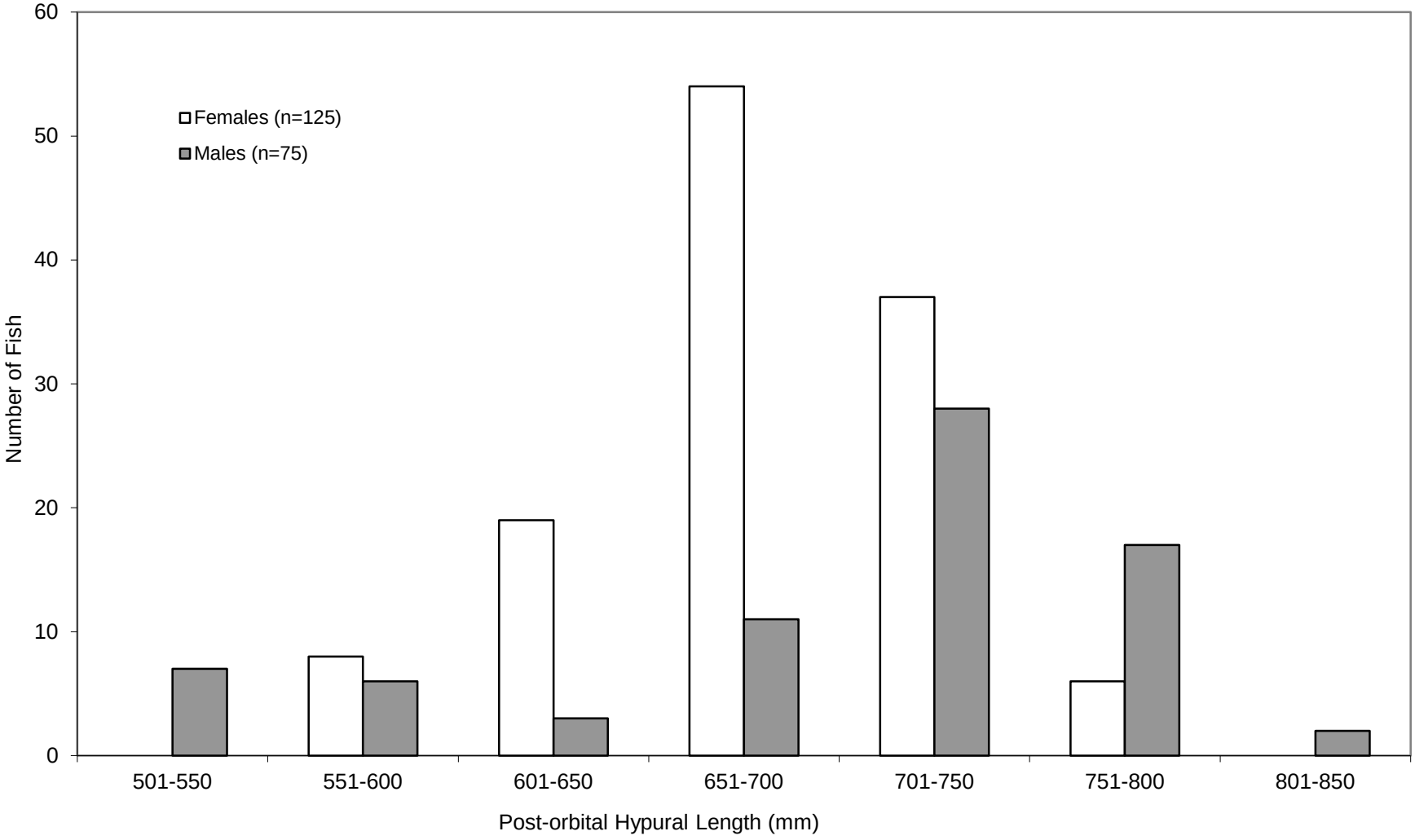


Figure 5
Stuart River Chinook Length Frequency Distribution, 2005

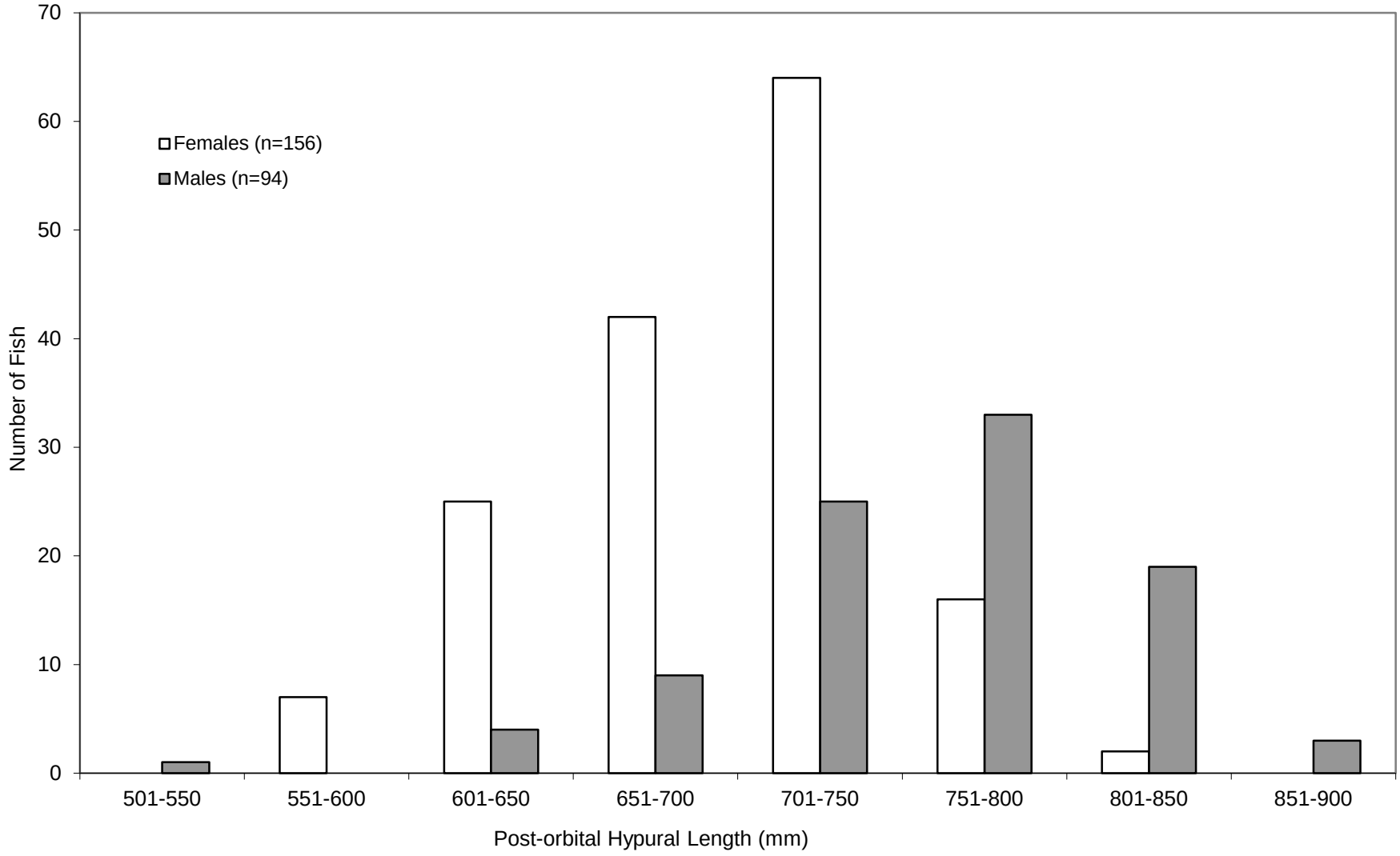


Figure 6
Nechako River Chinook Sex Ratio, 1988-2005

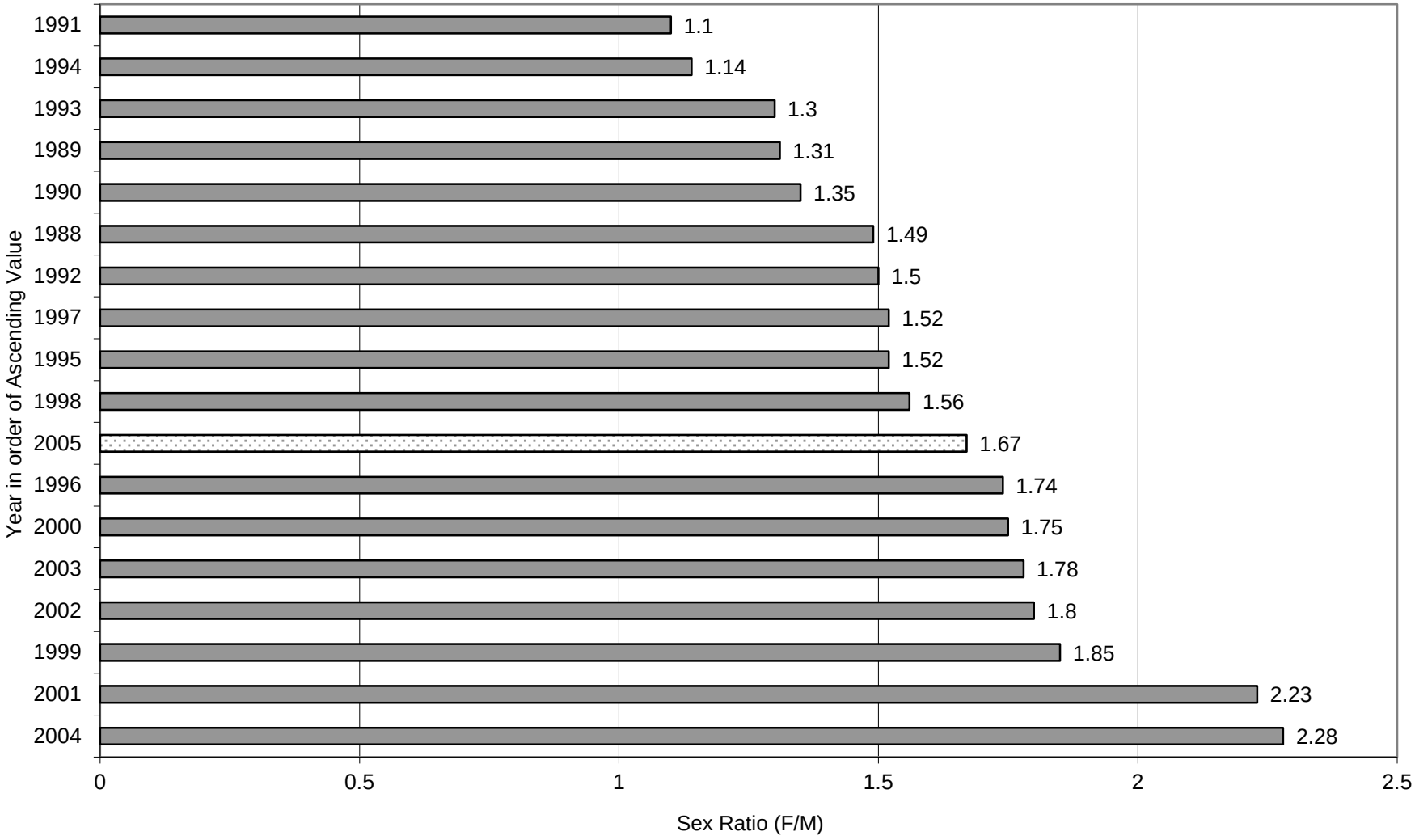


Figure 7
Nechako River Chinook Male Mean Length, 1988-2005

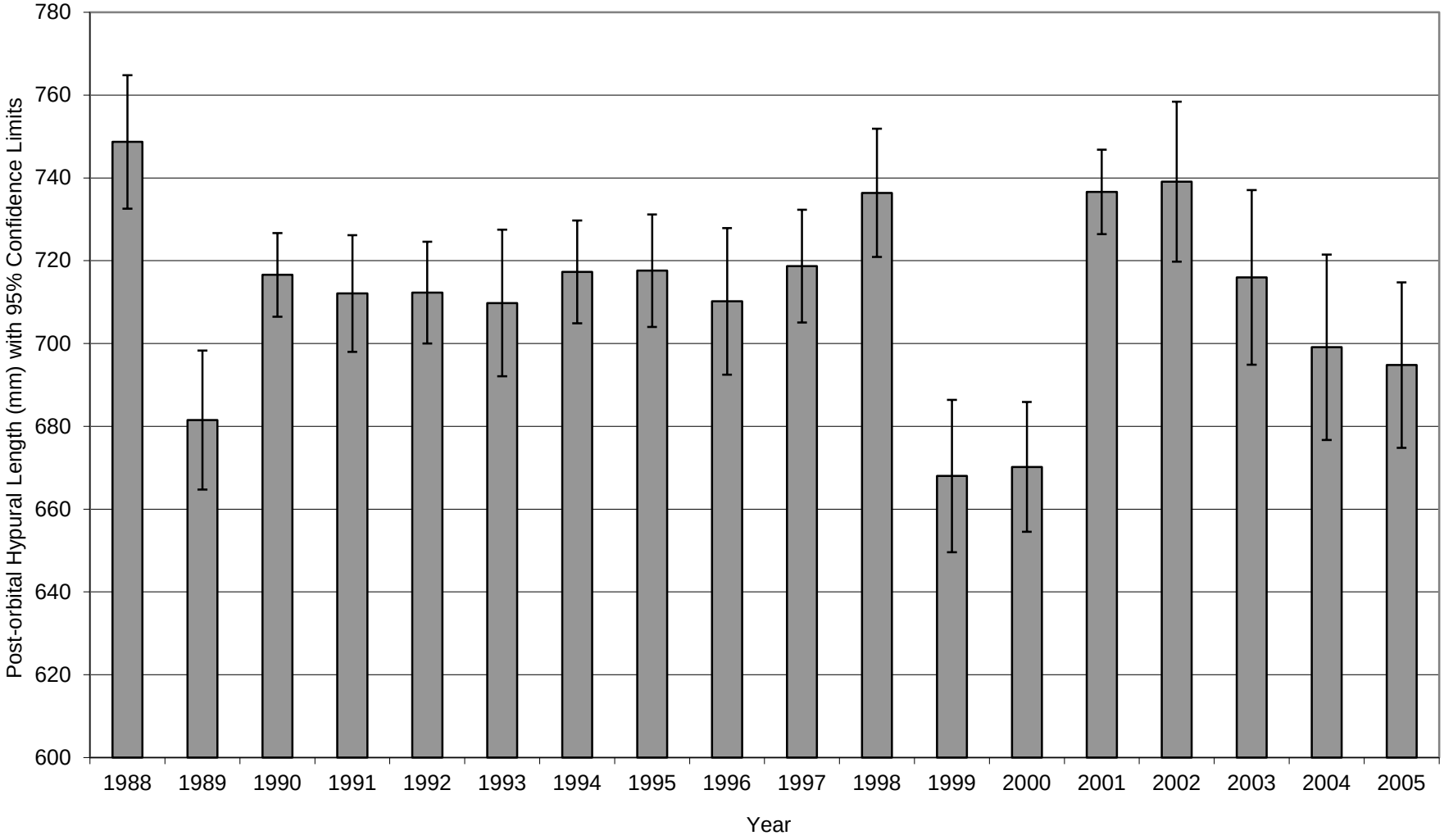


Figure 8
Nechako River Chinook Female Mean Length, 1988-2005

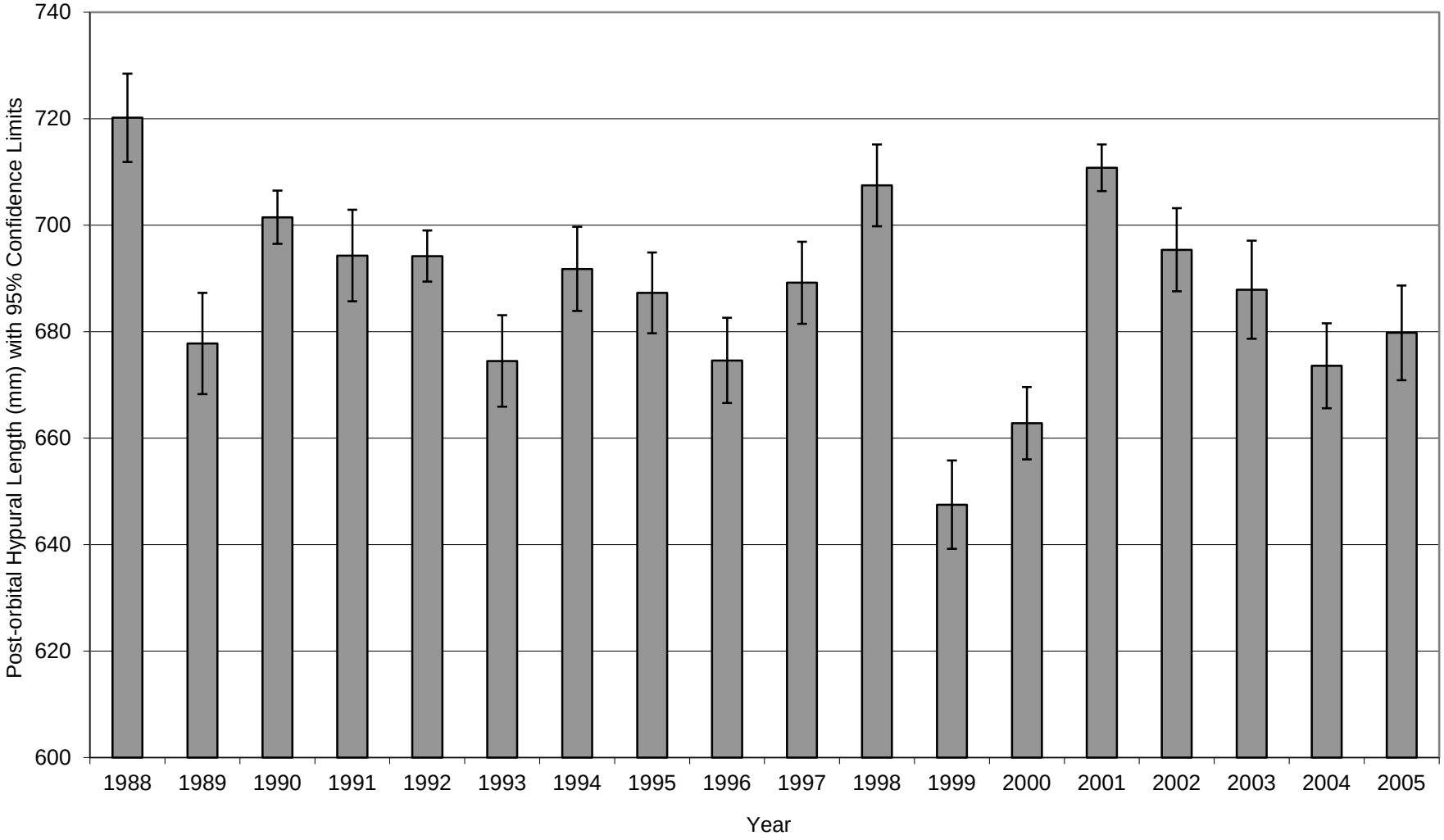
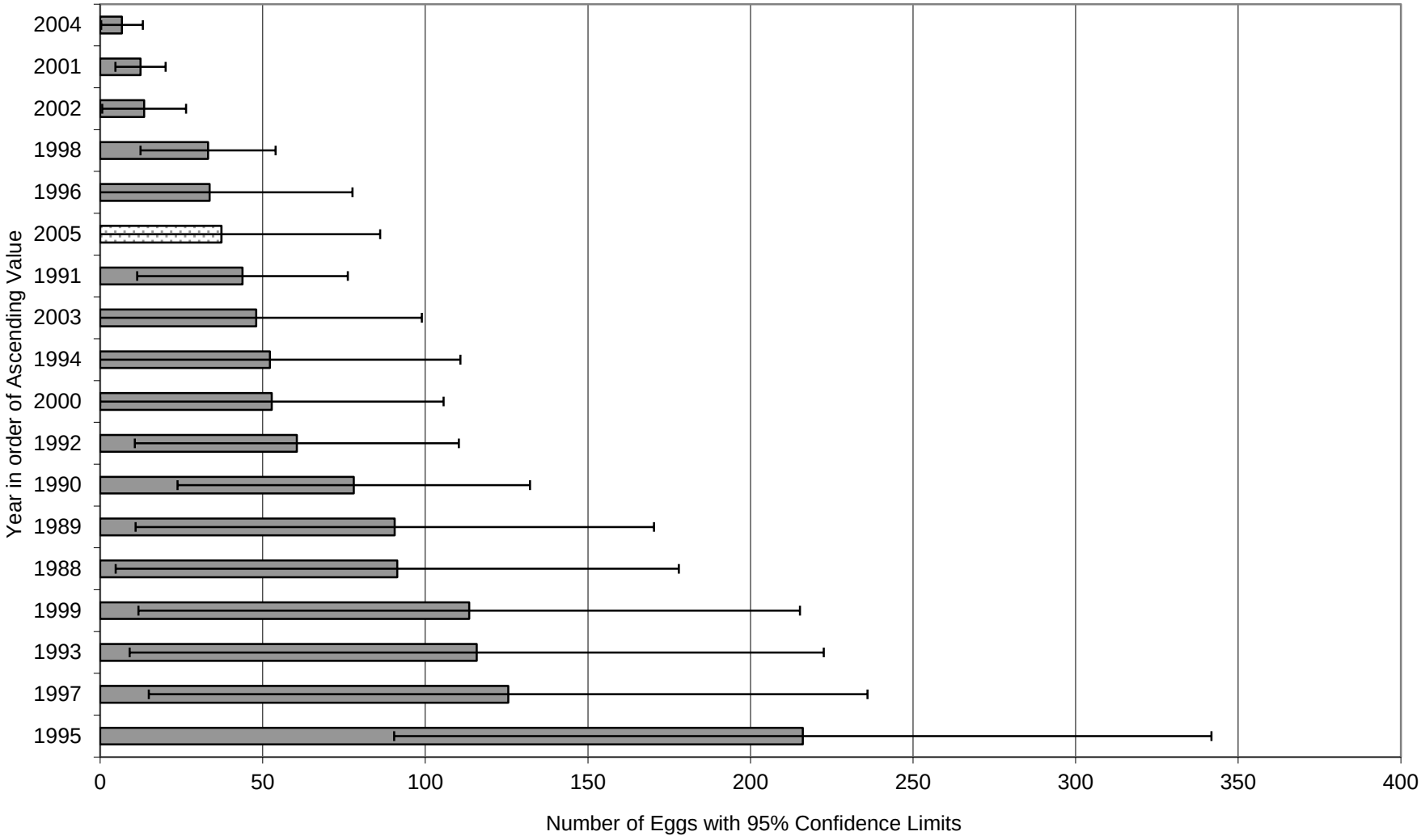


Figure 9
Nechako River Chinook Mean Egg retention, 1988-2005



Appendix 1. Nechako River Carcass Data

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
1	22-Sep-05	11	F	1	682	62	61051 1	52	
2	22-Sep-05	11	F	2	685	0	61051 2	52	
3	22-Sep-05	11	M	1	600		61051 3	n/a	
4	22-Sep-05	11	F	4	675	584	61051 4	3M	partially spawned
5	22-Sep-05	11	F	3	723	3	61051 5	52	
6	22-Sep-05	11	F	3	565	1	61052 1	42	
7	22-Sep-05	11	F	3	723	0	61052 2	52	
8	22-Sep-05	11	F	3	721	196	61052 3	n/a	
9	22-Sep-05	11	M	3	545		61052 4	42	
10	22-Sep-05	11	F	1	692	1	61052 5	42	
11	22-Sep-05	11	M	3	678		61053 1	42	
12	22-Sep-05	11	F	1	722	0	61053 2	3M	
13	22-Sep-05	12	F	1	712	0	61053 3	S2	
14	22-Sep-05	12	M	1	720		61053 4	52	
15	22-Sep-05	12	F	3	673	1	61053 5	62	
16	22-Sep-05	12	F	3	662	0	61054 1	52	
17	22-Sep-05	12	F	1	675	0	61054 2	52	
18	23-Sep-05	12	F	3	667	0	61054 3	3M	
19	23-Sep-05	12	F	4	774	0	61054 4	52	
20	23-Sep-05	12	M	2	668		61054 5	52	
21	23-Sep-05	12	M	3	777		61055 1	62	
22	23-Sep-05	12	F	4	673	21	61055 2	52	
23	23-Sep-05	12	F	3	710	0	61055 3	52	
24	23-Sep-05	12	F	2	648	11	61055 4	52	
25	23-Sep-05	12	M	2	692		61055 5	52	
26	23-Sep-05	12	M	1	760		61056 1	52	
27	23-Sep-05	12	M	1	555		61056 2	42	
28	23-Sep-05	12	F	2	608	17	61056 3	42	
29	23-Sep-05	12	F	3	628	2	61056 4	52	
30	23-Sep-05	12	F	1	666	23	61056 5	52	
31	24-Sep-05	14	M	2	742		61057 1	52	
32	24-Sep-05	14	F	3	663	0	61057 2	52	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
33	24-Sep-05	14	F	1	737	0	61057 3	52	
34	24-Sep-05	14	M	1	718		61057 4	52	
35	24-Sep-05	14	M	2	742		61057 5	52	
36	24-Sep-05	14	F	1	709	0	61058 1	3M	
37	24-Sep-05	14	F	2	660	5	61058 2	52	
38	24-Sep-05	14	F	3	642	2	61058 3	52	
39	24-Sep-05	14	F	1	712	0	61058 4	52	
40	24-Sep-05	14	F	1	705	24	61058 5	52	
41	25-Sep-05	16	F	3	557	0	61059 1	42	
42	25-Sep-05	16	F	3	635	0	61059 2	42	
43	25-Sep-05	16	M	1	651		61059 3	42	
44	25-Sep-05	16	M	2	692		61059 4	52	
45	25-Sep-05	16	F	2	673	5	61059 5	52	
46	25-Sep-05	16	F	4	704	0	61060 1	S2	
47	25-Sep-05	16	F	2	712	0	61060 2	S2	
48	25-Sep-05	16	F	1	720	1	61060 3	52	
49	25-Sep-05	16	F	3	671	0	61060 4	52	
50	25-Sep-05	16	M	4	731		61060 5	S2	
51	25-Sep-05	16	F	2	743	0	61061 1	52	
52	25-Sep-05	16	F	1	677	7	61061 2	52	
53	25-Sep-05	16	F	1	702	0	61061 3	52	
54	25-Sep-05	16	F	2	581	1	61061 4	42	
55	25-Sep-05	16	F	2	696	1	61061 5	52	
56	25-Sep-05	16	M	2	765		61062 1	52	fork length = 970
57	25-Sep-05	16	M	1	780		61062 2	52	fork length = 1000
58	26-Sep-05	3.1	F	1	727	3000	61062 3	52	partially spawned
59	26-Sep-05	3.1	F	1	750	157	61062 4	52	partially skeined
60	26-Sep-05	3.1	F	1	723	0	61062 5	52	
61	26-Sep-05	3.1	F	2	743	0	61063 1	2M	
62	26-Sep-05	3.1	M	2	764		61063 2	52	
63	26-Sep-05	3.1	F	3	705	0	61063 3	52	
64	26-Sep-05	3.1	F	1	657	2	61063 4	52	
65	26-Sep-05	3.1	F	3	686	6	61063 5	52	
66	26-Sep-05	3.1	F	3	654	0	61064 1	52	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
67	26-Sep-05	3.2	F	1	793	0	61064 2	62	
68	26-Sep-05	3.2	M	3	723		61064 3	52	
69	26-Sep-05	3.2	M	1	681		61064 4	42	
70	26-Sep-05	3.2	M	1	709		61064 5	n/a	
71	26-Sep-05	3.2	M	1	734		61065 1	52	
72	26-Sep-05	3.2	M	1	744		61065 2	63	
73	26-Sep-05	3.2	M	1	744		61065 3	52	
74	26-Sep-05	3.2	F	4	742	0	61065 4	62	
75	26-Sep-05	3.2	F	1	677	0	61065 5	52	
76	26-Sep-05	3.2	F	3	641	0	61066 1	42	
77	26-Sep-05	3.2	F	1	700	1	61066 2	63	
78	26-Sep-05	3.2	M	1	796		61066 3	S2	fork length = 1037
79	26-Sep-05	3.2	M	2	695		61066 4	52	
80	28-Sep-05	3.2	M	1	793		61066 5	52	fork length = 1019
81	28-Sep-05	4	M	1	672		61067 1	52	
82	28-Sep-05	4	M	1	732		61067 2	52	
83	28-Sep-05	4	F	1	613	0	61067 3	52	
84	28-Sep-05	4	M	2	692		61067 4	52	
85	28-Sep-05	4	M	2	745		61067 5	52	
86	28-Sep-05	4	F	3	703	0	61068 1	52	
87	28-Sep-05	4	M	1	739		61068 2	52	
88	28-Sep-05	4	M	1	597		61068 3	42	
89	28-Sep-05	4	F	3	683	0	61068 4	3M	
90	28-Sep-05	4	F	4	674	0	61068 5	52	
91	28-Sep-05	4	F	4	671	0	61069 1	52	
92	28-Sep-05	4	F	2	655	0	61069 2	52	
93	28-Sep-05	4	M	2	709		61069 3	52	
94	28-Sep-05	4	F	1	673	450	61069 4	52	
95	28-Sep-05	4	M	1	780		61069 5	3M	very yellow - partially spawned
96	28-Sep-05	4	M	2	595		61070 1	42	
97	28-Sep-05	4	M	1	655		61070 2	52	
98	28-Sep-05	4	F	3	726	0	61070 3	42	
99	28-Sep-05	4	F	1	788	2	61070 4	52	
100	28-Sep-05	4	M	2	542		61070 5	42	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
101	30-Sep-05	3.2	M	1	570		61071 1	42	
102	30-Sep-05	3.2	F	1	693	0	61071 2	52	
103	30-Sep-05	3.2	F	1	735	0	61071 3	52	
104	30-Sep-05	3.2	F	3	642	0	61071 4	52	
105	30-Sep-05	3.2	M	4	720		61071 5	52	
106	30-Sep-05	3.2	M	1	784		61072 1	52	
107	30-Sep-05	3.2	F	4	614	0	61072 2	42	
108	30-Sep-05	3.2	F	1	586	0	61072 3	42	
109	30-Sep-05	3.2	M	1	619		61072 4	42	
110	30-Sep-05	3.2	M	2	524		61072 5	42	
111	30-Sep-05	4	F	3	403	skein	61073 1	52	unspawned
112	30-Sep-05	4	M	1	536		61073 2	42	
113	30-Sep-05	4	F	1	717	2	61073 3	S2	
114	30-Sep-05	4	M	2	737		61073 4	52	
115	30-Sep-05	4	M	1	544		61073 5	42	
116	30-Sep-05	4	M	2	544		61074 1	42	
117	30-Sep-05	4	F	2	692	0	61074 2	42	
118	30-Sep-05	4	M	1	510		61074 3	42	
119	30-Sep-05	4	M	1	717		61074 4	42	
120	30-Sep-05	4	M	1	732		61074 5	52	
121	30-Sep-05	4	M	4	624		61075 1	42	
122	30-Sep-05	4	F	1	688	0	61075 2	42	
123	30-Sep-05	4	F	1	648	4	61075 3	42	
124	30-Sep-05	4	M	2	723		61075 4	S2	
125	30-Sep-05	4	F	1	687	0	61075 5	52	
126	30-Sep-05	4	F	1	687	0	61076 1	3M	
127	30-Sep-05	4	M	2	724		61076 2	52	
128	30-Sep-05	4	M	1	741		61076 3	52	
129	30-Sep-05	4	M	1	783		61076 4	52	fork length = 1022
130	30-Sep-05	4	F	1	600	1	61076 5	42	
131	1-Oct-05	12	F	3	655	0	61077 1	52	
132	1-Oct-05	11	F	2	600	0	61077 2	42	
133	1-Oct-05	11	F	2	686	1	61077 3	52	
134	1-Oct-05	11	M	3	724		61077 4	52	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
135	1-Oct-05	11	F	3	690	0	61077 5	S2	
136	1-Oct-05	11	F	1	708	0	61078 1	S2	
137	1-Oct-05	11	F	2	586	0	61078 2	42	
138	1-Oct-05	11	M	2	784		61078 3	52	
139	1-Oct-05	11	F	3	630	0	61078 4	42	
140	1-Oct-05	11	F	4	695	0	61078 5	52	
141	2-Oct-05	12	F	4	673	0	61079 1	42	
142	2-Oct-05	12	F	2	658	3	61079 2	52	
143	2-Oct-05	12	F	4	690	0	61079 3	3M	
144	2-Oct-05	12	M	3	735		61079 4	52	
145	2-Oct-05	12	M	2	551		61079 5	42	
146	2-Oct-05	12	F	1	653	0	61080 1	52	
147	2-Oct-05	12	F	1	686	0	61080 2	52	
148	2-Oct-05	12	M	4	754		61080 3	S2	
149	2-Oct-05	12	F	4	640	0	61080 4	52	
150	2-Oct-05	12	F	2	600	0	61080 5	42	
151	3-Oct-05	3.1	F	3	634	0	61081 1	42	
152	3-Oct-05	3.1	F	2	693	0	61081 2	52	
153	3-Oct-05	3.1	F	3	752	0	61081 3	52	
154	3-Oct-05	3.1	M	1	813		61081 4	63	fork length = 1053
155	3-Oct-05	3.1	F	3	730	0	61081 5	52	
156	3-Oct-05	3.1	F	2	695	0	61082 1	52	
157	3-Oct-05	3.1	M	2	755		61082 2	3M	
158	3-Oct-05	3.1	F	1	732	2	61082 3	52	
159	3-Oct-05	3.1	F	4	677	0	61082 4	52	
160	3-Oct-05	3.1	F	4	702	0	61082 5	52	
161	3-Oct-05	3.1	F	3	670	0	61083 1	42	
162	4-Oct-05	3.1	M	1	805		61083 2	52	fork length = 1041
163	4-Oct-05	3.1	F	1	745	1	61083 3	52	
164	4-Oct-05	3.1	M	1	722		61083 4	42	
165	4-Oct-05	3.1	M	3	755		61083 5	42	
166	6-Oct-05	3.1	F	1	703	2	61084 1	3M	
167	6-Oct-05	3.1	M	3	744		61084 2	S2	
168	6-Oct-05	3.1	M	3	785		61084 3	62	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
169	6-Oct-05	3.1	M	3	609		61084 4	42	
170	6-Oct-05	3.1	M	4	752		61084 5	2M	
171	6-Oct-05	3.1	M	3	353		61085 1	32	fork length = 444
172	6-Oct-05	3.1	F	1	642	1	61085 2	52	
173	6-Oct-05	3.1	F	2	654	0	61085 3	52	predated - belly ripped open
174	6-Oct-05	3.1	F	1	666	0	61085 4	52	
175	6-Oct-05	3.1	F	2	724	3	61085 5	52	
176	6-Oct-05	3.1	M	2	741		61086 1	52	
177	6-Oct-05	3.1	F	3	691	0	61086 2	52	
178	6-Oct-05	3.1	F	1	686	0	61086 3	52	
179	6-Oct-05	3.1	F	4	651	0	61086 4	52	
180	6-Oct-05	3.1	F	1	638	0	61086 5	52	
181	6-Oct-05	3.1	F	1	755	0	61087 1	S2	
182	7-Oct-05	3.2	F	1	719	0	61087 2	52	
183	7-Oct-05	3.2	F	2	708	2	61087 3	42	
184	7-Oct-05	3.2	F	1	650	1	61087 4	3M	
185	7-Oct-05	3.2	F	1	662	1	61087 5	S2	
186	7-Oct-05	3.2	F	1	674	0	61088 1	52	crinkleback
187	7-Oct-05	3.2	F	1	713	1	61088 2	52	
188	7-Oct-05	3.2	F	1	650	0	61088 3	52	
189	7-Oct-05	3.2	F	1	722	0	61088 4	52	
190	7-Oct-05	3.1	M	2	747		61088 5	42	
191	7-Oct-05	3.1	F	2	624	0	61089 1	52	
192	7-Oct-05	3.1	F	1	644	1	61089 2	2M	
193	7-Oct-05	3.1	F	1	733	0	61089 3	42	
194	7-Oct-05	3.1	F	1	695	0	61089 4	52	yellow coloration + liver
195	7-Oct-05	3.1	M	1	737		61089 5	42	
196	7-Oct-05	3.1	F	2	752	4	61090 1	52	
197	7-Oct-05	3.1	F	1	693	0	61090 2	52	
198	7-Oct-05	3.1	M	1	695		61090 3	52	
199	7-Oct-05	3.1	M	1	757		61090 4	52	
200	7-Oct-05	3.1	F	1	682	11	61090 5	52	

Appendix 2 Stuart River Carcass Data

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
1	22-Sep-05	1	M	3	750		61101 1	42	
2	22-Sep-05	1	F	3	597	0	61101 2	42	
3	22-Sep-05	1	M	3	711		61101 3	52	
4	22-Sep-05	1	M	2	863		61101 4	52	
5	22-Sep-05	1	F	2	724	0	61101 5	52	
6	22-Sep-05	2	F	2	700	0	61102 1	42	
7	22-Sep-05	2	M	2	838		61102 2	S2	
8	22-Sep-05	2	F	2	800	0	61102 3	S2	
9	22-Sep-05	2	M	2	775		61102 4	3M	
10	22-Sep-05	2	F	2	760	0	61102 5	n/a	
11	23-Sep-05	3	F	2	690	0	61103 1	52	
12	23-Sep-05	3	M	2	790		61103 2	42	
13	23-Sep-05	3	M	3	860		61103 3	52	
14	23-Sep-05	4	F	2	690	0	61103 4	52	
15	23-Sep-05	4	F	3	700	0	61103 5	52	
16	23-Sep-05	4	F	2	720	0	61104 1	52	
17	23-Sep-05	4	M	2	700		61104 2	42	
18	23-Sep-05	4	M	3	680		61104 3	42	
19	23-Sep-05	4	F	2	750	0	61104 4	52	
20	23-Sep-05	4	F	2	690	0	61104 5	52	
21	23-Sep-05	4	M	3	680		61105 1	42	
22	23-Sep-05	4	F	2	710	0	61105 2	52	
23	23-Sep-05	4	F	3	670	0	61105 3	52	
24	23-Sep-05	4	M	2	720		61105 4	42	
25	23-Sep-05	4	F	2	740	0	61105 5	52	
26	23-Sep-05	4	F	2	725	0	61106 1	52	
27	23-Sep-05	4	F	2	725	0	61106 2	42	
28	23-Sep-05	4	F	3	760	0	61106 3	42	
29	23-Sep-05	4	M	2	735		61106 4	52	
30	23-Sep-05	4	M	2	780		61106 5	42	
31	23-Sep-05	4	M	2	795		61107 1	42	
32	23-Sep-05	4	F	2	705	0	61107 2	3M	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
33	23-Sep-05	4	M	2	770		61107 3	3M	
34	23-Sep-05	4	M	2	780		61107 4	52	
35	23-Sep-05	4	F	2	680	0	61107 5	52	
36	23-Sep-05	5	F	3	745	0	61108 1	42	
37	23-Sep-05	5	M	3	825		61108 2	52	
38	23-Sep-05	5	F	3	640	0	61108 3	52	
39	23-Sep-05	5	M	3	750		61108 4	52	
40	23-Sep-05	5	M	3	605		61108 5	42	
41	23-Sep-05	5	F	3	735	0	61109 1	52	
42	23-Sep-05	6	F	3	610	0	61109 2	42	
43	23-Sep-05	6	M	3	755		61109 3	52	
44	23-Sep-05	6	M	3	760		61109 4	42	
45	23-Sep-05	6	F	3	605	0	61109 5	42	
46	26-Sep-05	1	F	1	730	0	61110 1	52	
47	26-Sep-05	1	F	2	600	0	61110 2	42	
48	26-Sep-05	1	M	3	840		61110 3	52	
49	26-Sep-05	2	F	1	700	0	61110 4	52	
50	26-Sep-05	2	M	3	750		61110 5	42	
51	26-Sep-05	2	F	2	720	0	61111 1	3M	
52	26-Sep-05	2	F	3	740	0	61111 2	3M	
53	26-Sep-05	3	F	2	600	0	61111 3	42	
54	26-Sep-05	3	M	3	790		61111 4	3M	
55	26-Sep-05	3	M	2	550		61111 5	42	
56	26-Sep-05	3	F	2	750	0	61112 1	52	
57	26-Sep-05	3	M	3	810		61112 2	52	
58	26-Sep-05	3	F	2	590	0	61112 3	42	
59	26-Sep-05	3	F	2	620	0	61112 4	42	
60	26-Sep-05	3	M	3	780		61112 5	S2	
61	26-Sep-05	4	F	2	660	0	61113 1	42	
62	26-Sep-05	4	F	4	770	0	61113 2	52	
63	26-Sep-05	4	M	3	780		61113 3	52	
64	26-Sep-05	4	F	3	630	0	61113 4	42	
65	26-Sep-05	4	M	3	760		61113 5	S2	
66	26-Sep-05	4	F	2	680	114	61114 1	52	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
67	26-Sep-05	4	F	2	710	0	61114 2	3M	
68	26-Sep-05	4	M	2	690		61114 3	42	
69	26-Sep-05	4	M	3	730		61114 4	52	
70	26-Sep-05	4	F	2	700	0	61114 5	52	
71	26-Sep-05	4	M	2	780		61115 1	52	
72	26-Sep-05	4	F	2	730	0	61115 2	42	
73	26-Sep-05	4	F	3	740	0	61115 3	42	
74	26-Sep-05	4	M	3	750		61115 4	42	
75	26-Sep-05	4	F	3	710	0	61115 5	52	
76	27-Sep-05	4	F	4	610	0	61116 1	42	
77	27-Sep-05	4	M	3	820		61116 2	S2	
78	27-Sep-05	4	F	2	660	0	61116 3	42	
79	27-Sep-05	4	F	2	700	0	61116 4	42	
80	27-Sep-05	4	F	2	630	0	61116 5	42	
81	27-Sep-05	4	M	3	830		61117 1	52	
82	27-Sep-05	5	F	3	710	0	61117 2	2M	
83	27-Sep-05	5	M	3	750		61117 3	52	
84	27-Sep-05	5	F	2	580	0	61117 4	42	
85	27-Sep-05	5	F	2	640	0	61117 5	52	
86	27-Sep-05	6	F	2	740	0	61118 1	52	
87	27-Sep-05	6	M	3	760		61118 2	52	
88	27-Sep-05	6	F	4	650	0	61118 3	52	
89	27-Sep-05	6	M	3	730		61118 4	42	
90	27-Sep-05	6	F	2	690	62	61118 5	63	
91	27-Sep-05	6	M	3	750		61119 1	42	
92	27-Sep-05	6	M	3	850		61119 2	62	
93	28-Sep-05	1	M	3	755		61119 3	3M	
94	28-Sep-05	1	F	2	705	0	61119 4	52	
95	28-Sep-05	2	F	2	700	3	61119 5	42	
96	28-Sep-05	2	M	3	740		61120 1	52	
97	28-Sep-05	2	F	2	695	0	61120 2	42	
98	28-Sep-05	2	F	4	635	0	61120 3	52	
99	28-Sep-05	2	M	3	795		61120 4	52	
100	28-Sep-05	2	F	3	690	0	61120 5	52	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
101	28-Sep-05	2	M	3	790		61121 1	52	
102	28-Sep-05	2	M	3	765		61121 2	52	
103	28-Sep-05	3	F	3	680	0	61121 3	52	
104	28-Sep-05	3	M	3	670		61121 4	42	
105	28-Sep-05	3	F	3	720	0	61121 5	42	
106	28-Sep-05	3	F	3	770	0	61122 1	52	
107	28-Sep-05	3	M	3	790		61122 2	52	
108	28-Sep-05	3	M	4	730		61122 3	42	
109	28-Sep-05	3	F	2	610	42	61122 4	42	
110	28-Sep-05	3	M	3	725		61122 5	52	
111	28-Sep-05	3	M	3	670		61123 1	52	
112	28-Sep-05	3	F	3	610	0	61123 2	42	
113	28-Sep-05	3	F	3	750	0	61123 3	52	
114	28-Sep-05	4	M	4	770		61123 4	52	
115	28-Sep-05	4	F	3	710	0	61123 5	52	
116	28-Sep-05	4	F	3	730	0	61124 1	52	scales black
117	28-Sep-05	4	F	2	670	0	61124 2	52	
118	28-Sep-05	4	M	2	760		61124 3	42	
119	28-Sep-05	4	F	2	720	0	61124 4	52	
120	28-Sep-05	4	F	2	670	0	61124 5	52	
121	28-Sep-05	4	M	3	800		61125 1	52	
122	28-Sep-05	4	M	4	805		61125 2	52	
123	28-Sep-05	4	M	3	805		61125 3	52	
124	28-Sep-05	4	F	2	740	0	61125 4	52	
125	28-Sep-05	4	F	3	800	12	61125 5	52	
126	29-Sep-05	4	M	2	813		61126 1	42	
127	29-Sep-05	4	F	2	750	0	61126 2	62	
128	29-Sep-05	4	F	2	720	0	61126 3	52	
129	29-Sep-05	4	M	3	700		61126 4	52	
130	29-Sep-05	4	F	2	690	115	61126 5	42	
131	29-Sep-05	4	F	2	660	0	61127 1	S2	
132	29-Sep-05	4	F	2	690	0	61127 2	3M	
133	29-Sep-05	4	M	3	730		61127 3	52	
134	29-Sep-05	4	F	2	710	0	61127 4	42	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
135	29-Sep-05	4	F	2	670	0	61127 5	3M	
136	29-Sep-05	4	F	2	700	0	61128 1	52	
137	29-Sep-05	4	M	3	765		61128 2	3M	
138	29-Sep-05	4	F	2	620	5	61128 3	42	
139	29-Sep-05	4	M	3	740		61128 4	52	
140	29-Sep-05	4	F	3	670	0	61128 5	2M	
141	29-Sep-05	4	M	4	810		61129 1	42	
142	29-Sep-05	4	F	3	710	0	61129 2	42	
143	29-Sep-05	5	F	2	750	0	61129 3	52	
144	29-Sep-05	5	M	3	785		61129 4	52	
145	29-Sep-05	5	F	3	645	0	61129 5	42	
146	29-Sep-05	5	M	3	780		61130 1	52	
147	29-Sep-05	5	F	2	770	0	61130 2	52	
148	29-Sep-05	5	M	3	750		61130 3	52	
149	29-Sep-05	5	F	3	620	0	61130 4	42	
150	29-Sep-05	6	M	3	750		61130 5	42	
151	29-Sep-05	6	F	3	765	0	61131 1	52	
152	29-Sep-05	6	M	3	610		61131 2	42	
153	29-Sep-05	6	F	2	650	0	61131 3	52	
154	29-Sep-05	6	F	2	720	11	61131 4	42	
155	29-Sep-05	6	F	2	650	6	61131 5	52	
156	29-Sep-05	6	M	2	680		61132 1	42	
157	29-Sep-05	6	F	3	640	5	61132 2	42	
158	29-Sep-05	6	F	3	720	350	61132 3	52	Partial Spawn
159	29-Sep-05	6	M	4	760		61132 4	S2	
160	29-Sep-05	6	M	4	760		61132 5	52	
161	30-Sep-05	1	F	2	616	0	61133 1	42	
162	30-Sep-05	1	F	2	730	0	61133 2	3M	
163	30-Sep-05	2	M	3	785		61133 3	52	
164	30-Sep-05	3	M	3	720		61133 4	42	
165	30-Sep-05	3	F	2	725	0	61133 5	52	
166	30-Sep-05	4	F	2	710	0	61134 1	42	
167	30-Sep-05	4	F	3	700	0	61134 2	52	
168	30-Sep-05	4	F	3	750	0	61134 3	52	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
169	30-Sep-05	4	F	3	710	0	61134 4	52	
170	30-Sep-05	4	M	3	880		61134 5	52	
171	30-Sep-05	5	F	3	690	0	61135 1	42	
172	30-Sep-05	5	F	3	770	0	61135 2	42	
173	30-Sep-05	6	M	4	720		61135 3	S2	
174	30-Sep-05	6	F	2	730	0	61135 4	52	
175	30-Sep-05	6	F	2	740	0	61135 5	52	
176	3-Oct-05	1	M	3	650		61136 1	2M	
177	3-Oct-05	1	M	3	640		61136 2	42	
178	3-Oct-05	2	F	3	720	0	61136 3	42	
179	3-Oct-05	2	F	2	785	0	61136 4	52	
180	3-Oct-05	3	F	3	690	0	61136 5	52	
181	3-Oct-05	3	M	3	655		61137 1	42	
182	3-Oct-05	4	F	3	710	0	61137 2	52	
183	3-Oct-05	4	F	3	590	0	61137 3	42	
184	3-Oct-05	5	F	3	675	0	61137 4	42	
185	3-Oct-05	5	F	3	680	0	61137 5	S2	
186	3-Oct-05	6	F	3	645	0	61138 1	2M	
187	3-Oct-05	6	F	3	700	100	61138 2	52	
188	3-Oct-05	6	F	4	650	0	61138 3	42	
189	3-Oct-05	6	F	3	650	1	61138 4	52	
190	3-Oct-05	6	F	2	760	0	61138 5	52	
191	4-Oct-05	1	F	4	600	50	61139 1	2M	
192	4-Oct-05	1	F	4	710	0	61139 2	n/a	
193	4-Oct-05	1	M	3	810		61139 3	42	
194	4-Oct-05	1	F	3	780	0	61139 4	n/a	
195	4-Oct-05	2	F	4	720	0	61139 5	2M	
196	4-Oct-05	3	F	4	710	0	61140 1	52	
197	4-Oct-05	3	F	4	720	0	61140 2	2M	
198	4-Oct-05	3	F	3	790	0	61140 3	42	
199	4-Oct-05	3	M	3	830		61140 4	42	
200	4-Oct-05	3	F	3	790	0	61140 5	42	
201	4-Oct-05	3	F	4	830	0	61141 1	3M	
202	4-Oct-05	3	M	4	750		61141 2	42	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
203	4-Oct-05	3	F	3	630	0	61141 3	n/a	
204	4-Oct-05	3	M	3	840		61141 4	52	
205	4-Oct-05	3	M	3	820		61141 5	3M	
206	4-Oct-05	3	M	4	810		61142 1	52	
207	4-Oct-05	3	F	3	735	0	61142 2	52	
208	4-Oct-05	3	F	4	715	0	61142 3	52	
209	4-Oct-05	3	M	3	830		61142 4	62	
210	4-Oct-05	3	F	3	705	0	61142 5	52	
211	4-Oct-05	3	F	3	750	0	61143 1	52	
212	4-Oct-05	3	F	3	730	0	61143 2	3M	
213	4-Oct-05	3	F	3	740	0	61143 3	3M	
214	4-Oct-05	3	F	3	720	0	61143 4	52	
215	4-Oct-05	3	F	4	730	0	61143 5	42	
216	4-Oct-05	3	F	3	750	0	61144 1	42	
217	4-Oct-05	4	F	3	730	0	61144 2	52	
218	4-Oct-05	4	F	4	660	0	61144 3	2M	
219	4-Oct-05	4	F	3	830	0	61144 4	3M	
220	4-Oct-05	4	F	4	680	0	61144 5	n/a	
221	4-Oct-05	4	F	4	690	0	61145 1	52	
222	4-Oct-05	4	M	3	840		61145 2	52	
223	4-Oct-05	4	F	3	620	0	61145 3	42	
224	4-Oct-05	4	F	4	720	0	61145 4	52	
225	4-Oct-05	4	F	3	670	0	61145 5	42	
226	4-Oct-05	4	M	4	830		61146 1	S2	
227	4-Oct-05	4	F	4	690	0	61146 2	42	
228	4-Oct-05	4	F	3	670	0	61146 3	42	
229	4-Oct-05	4	F	3	760	0	61146 4	52	
230	4-Oct-05	4	M	4	710		61146 5	42	
231	4-Oct-05	4	M	3	770		61147 1	n/a	
232	4-Oct-05	4	F	3	760	0	61147 2	n/a	
233	4-Oct-05	4	F	4	730	0	61147 3	52	
234	4-Oct-05	5	F	3	650	0	61147 4	52	
235	4-Oct-05	5	M	3	740		61147 5	52	
236	5-Oct-05	5	M	3	730		61148 1	42	

Fish #	Date	Reach	Sex	Condition	POHL (mm)	# Eggs Retained	Fish Sample	Age (Gilbert-Rich)	Comments
237	5-Oct-05	5	M	3	760		61148 2	n/a	
238	5-Oct-05	6	F	3	740	0	61148 3	52	
239	5-Oct-05	6	F	3	750	0	61148 4	3M	
240	5-Oct-05	6	F	2	680	0	61148 5	42	
241	5-Oct-05	6	F	3	740	500	61149 1	52	
242	5-Oct-05	6	F	4	680	0	61149 2	42	
243	5-Oct-05	6	F	4	700	0	61149 3	42	
244	5-Oct-05	5	F	2	690	0	61149 4	42	
245	5-Oct-05	5	F	3	710	75	61149 5	52	
246	5-Oct-05	3	F	3	750	0	61150 1	S2	
247	5-Oct-05	3	M	4	720		61150 2	52	
248	5-Oct-05	3	M	4	770		61150 3	3M	
249	5-Oct-05	3	M	4	770		61150 4	52	
250	5-Oct-05	3	M	4	800		61150 5	52	