

**Enumeration of Adult Steelhead
in the
Upper Sustut River, 2003**

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British Columbia
Ministry of Water, Land and Air Protection
Fisheries Branch
Skeena Region
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Skeena Fisheries Report SK 136

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Abstract

The upper Sustut River steelhead (*Oncorhynchus mykiss*) population was enumerated from July 31 to October 1, 2003, using a floating PVC fence. The first steelhead migrated past the fence on August 3 and by September 30, a total of 1,115 steelhead had been counted moving upstream. The fence count to September 30 is the standardized value used for all inter-annual comparisons and stock trend analyses. An additional 50 steelhead were observed downstream of the fence and three migrated past the fence on October 1 making the estimated spawning escapement to the upper Sustut River 1,168 steelhead. The 2003 fence count was the highest on record and was above the estimated carrying capacity (1036) for the upper Sustut system for steelhead (Tautz *et al.* 1992). Between July 30 and October 1, a total of 1,106 chinook salmon (*O. tshawytscha*), 4,992 sockeye salmon (*O. nerka*), 119 coho salmon (*O. kisutch*), 21 bull trout (*Salvelinus confluentus*), 12 resident rainbow trout (*O. mykiss*) and 55 Rocky Mountain whitefish (*Prosopium williamsoni*) were counted through the fence.

Nine steelhead tagged at the upper Sustut River fence in 2001 were recaptured in 2003 indicating that a minimum of 1.2% of the 2001 run returned as potential repeat spawners. Both the percentage of repeat spawners and the average growth between spawning events (58 mm) were below the long-term average. No steelhead have been tagged at the fence since 2001.

The ratio of female to male steelhead was 1.39:1. A total of 12.1% of all steelhead sampled at the fence for length and/or scales exhibited gillnet marks. This falls in the middle of historical values, which have ranged from 2.0 to 23.0% and averaged 11.5% since 1992. Female steelhead exhibited a higher gillnet mark rate than males (14.8 and 8.3%, respectively).

With the addition of the 2003 data point, the upper Sustut River steelhead fence count was no longer significantly correlated with the cumulative Tyee Test Fishery index to August 10.

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1.0 Introduction

Since 1986, the upper Sustut River steelhead (*Oncorhynchus mykiss*) stock has been used as an indicator of the status of all early run Skeena River summer steelhead. These steelhead stocks are of special concern for fisheries managers as their migration timing coincides with intense commercial fisheries for sockeye (*O. nerka*) and pink (*O. gorbuscha*) salmon where they are often captured incidentally (Ward *et al.* 1993; Cox-Rogers 1994). The resulting impact on the spawning populations can be significant and potentially detrimental to the long-term viability of these important stocks. Annual enumeration of the upper Sustut River steelhead stock provides yearly spawning population estimates that are hypothesized to demonstrate trends in the abundance of all early run Skeena steelhead.

The objectives of the 2003 enumeration program were:

1. to enumerate the upper Sustut River steelhead population,
2. to determine the number of previously tagged steelhead, by sex, that returned in 2003, and to calculate the growth rate for these repeat spawners,
3. to examine the sex ratio of steelhead throughout the run,
4. to examine the effect of water height and temperature on steelhead migration,
5. to examine the number of gillnet marked steelhead and the distribution of gillnet marked fish throughout the run,
6. to examine the relative run timing of male and female steelhead, and
7. to examine the effect of adding the 2003 data to the regression relationship between the upper Sustut River steelhead fence count and the cumulative Tye Test Fishery index to August 10.

2.0 Study Area

The Sustut River is located in north central British Columbia and is a tributary to the upper Skeena River (Figure 1). Originating in the Omineca Mountains approximately 220 km north of Smithers, B.C., the Sustut River flows for 8 km northwest from Sustut and Mud lakes where it joins Johanson Creek near the main spawning area for upper Sustut steelhead (Bustard 1993). The river then flows 3 km west to its confluence with Moosevale Creek before turning southwest for approximately 100 km and flowing into the Skeena River. The Sustut River drains approximately 3,574 km² and has seven main tributaries: Birdflat Creek, Bear River, Asitka River, Red Creek, Two Lake Creek, Moosevale Creek and Johanson Creek. Fish species known to inhabit the upper Sustut River include steelhead, chinook salmon (*O. tshawytscha*), sockeye salmon,

coho salmon (*O. kisutch*), bull trout (*Salvelinus confluentus*), Dolly Varden char (*S. malma*), Rocky Mountain whitefish (*Prosopium williamsoni*), and burbot (*Lota lota*)¹ (Bustard 1993; Saimoto 1994, 1995). The physical area that defines the upper Sustut River steelhead population is the Sustut River upstream of the Moosevale Creek confluence including Johanson Creek and Sustut and Johanson lakes (Spence *et al.* 1990, Figure 1). The physical area that defines the lower Sustut River steelhead population is the Sustut River downstream of the Bear River confluence, including Bear River and Bear Lake (Spence *et al.* 1990; Figure 1).

3.0 Methods

3.1 Steelhead Enumeration

A floating fish counting fence constructed from 3.8 cm PVC pipe was placed in the Sustut River, 500 m upstream of the confluence with Moosevale Creek and 70 km upstream of the confluence with the Bear River (Figures 2, 3). The fence was operated between July 30 and October 1. Fish were directed into an aluminum trap box where they held until a gate was opened allowing enumeration through a plexiglass viewing box as migration upstream continued.

The total count of steelhead migrating past the fence to September 30 reflects the size of the upper Sustut River steelhead population that spawns upstream of the fence and is the value used for all inter-annual comparisons. This count is hypothesized to demonstrate trends for other upper Skeena tributaries and is therefore used as an indicator of the status of the upper Skeena River steelhead stock complex. Fish holding downstream of the fence were counted visually on October 1 prior to fence removal. The sum of the upper Sustut River steelhead fence count and the visual survey of the section of the river immediately downstream of the fence is the estimated total spawning escapement for the upper Sustut River steelhead population.

The fence was inspected daily for debris accumulation and openings passable to fish. Debris was removed and repairs made as necessary. The fence trap box was checked in the morning and evening during low levels of fish migration and was checked more frequently during heavier migration. It has been observed that activity around the fence often halts or delays migration. Therefore, periods of fish handling and the removal of debris and carcasses from the fence were limited to avoid delaying fish migration. Past fence modifications implemented to reduce stress and mortality caused by the original

¹ In August, 1999 a single juvenile burbot (<10 cm fork-length) was found in a beaver impoundment by Ministry Staff on the Sustut River approximately 800 meters upstream of its confluence with Johanson Creek.

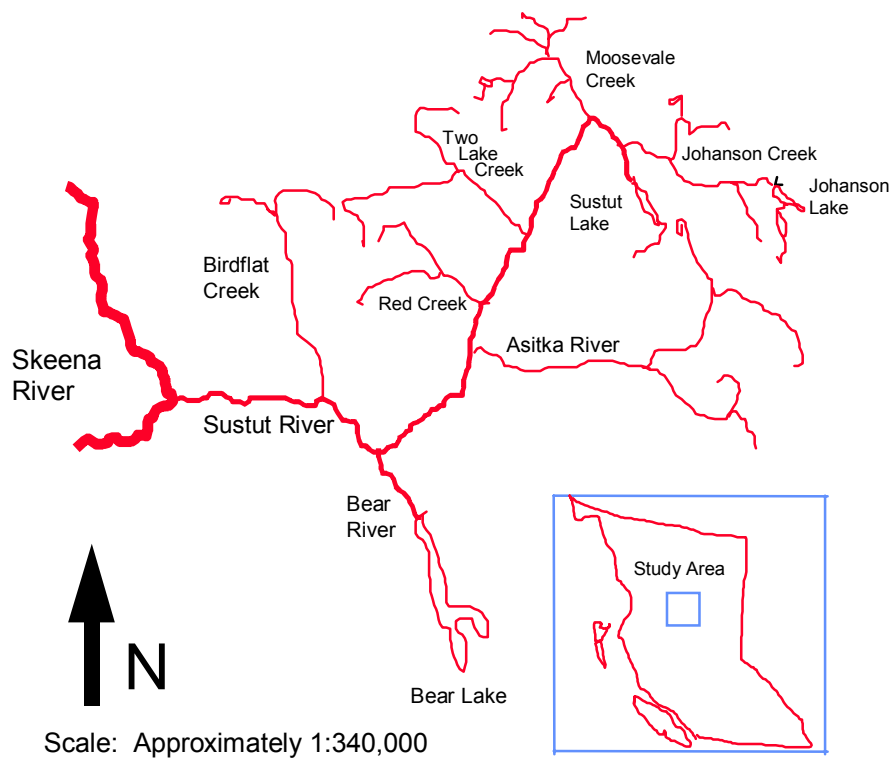


Figure 1. The Sustut River and major tributaries (from Saimoto 1995).

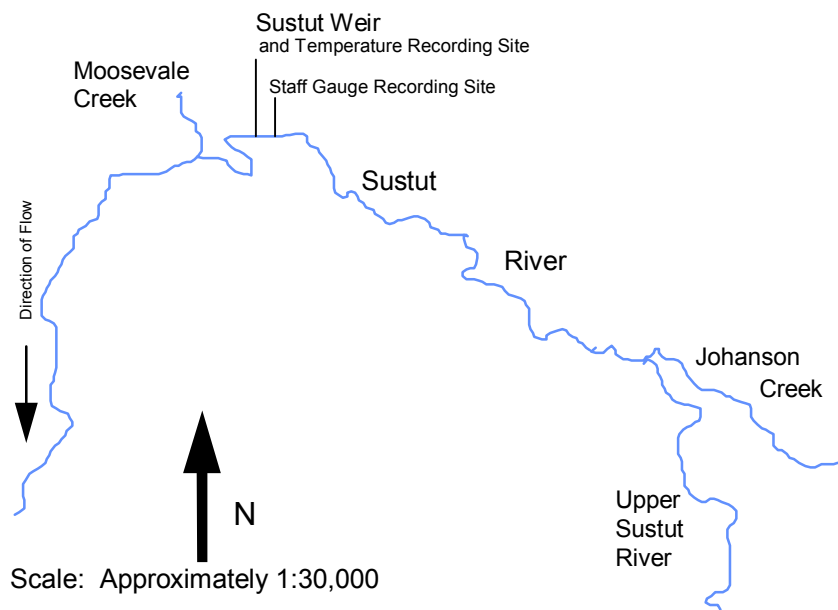


Figure 2. Detailed map of the study area (adapted from Saimoto 1995).

a



b



Figure 3. Aerial photograph of the steelhead enumeration fence looking downstream 1998 (a) and photograph of the fence from the trail on the right bank (b) of the Sustut River, 1999.

fence design and handling procedures were used again in 2003 (Williamson 1999b). Substantial additional modifications were made to the fence by contract staff to further reduce negative impacts on fish. These included covering all exposed bolts, connectors and other fence hardware to minimize abrasion injuries that can result as fish rub against fence panels, and modifying the area upstream of the fence to ensure fish had adequate low velocity sanctuaries for recovery after handling.

Experienced personnel, using the visual characteristics described in Scott and Crossman (1973) and McPhail and Carveth (1994), identified all fish passing the fence to species. In an attempt to reduce any stress-related mortality that may be associated with the collection of biological data no steelhead were tagged and a subsample of approximately 20% of all male and female steelhead were measured for nose-fork length and had scales collected for age analysis. For enumeration purposes, a plexiglass viewing box was used to identify fish by species and sex and to observe scars, wounds and general condition. All data were recorded for each fish and summarized daily. Mortalities recovered from the fence were measured for nose-fork length and a sample of 5 scales, taken mid-laterally between the dorsal and anal fins, was collected for age analysis. Photographs were taken of all steelhead mortalities to further document fish condition. All other species of fish encountered at the fence were enumerated and sub-sampled for length, while tissue samples were collected for genetic stock identification and scales removed for age analysis.

3.2 Steelhead Recaptures

Sex, nose-fork length and the presence of gillnet marks or predator scars were recorded for previously tagged steelhead (identified by tag presence, or unhealed scar in the tag position). Tag colour and number were recorded and original tagging location and date determined. The nose-fork lengths of recaptured fish were compared between tagging periods to determine growth rates. Dates of arrival at the fence were also compared between original tagging and subsequent recapture.

3.3 Steelhead Migration and Physical Data

Stream temperatures were recorded once daily using a minimum-maximum thermometer (Brannon Ltd). Also, automatic data loggers (Onset Computer Corporation, Pocasset, MA) were deployed in the river and in the air near the fence site to record hourly temperatures. Water levels were recorded in the morning and the evening using an instream staff-gauge. Air temperature and weather conditions were also recorded daily. Maximum daily water temperature and level were examined against steelhead migration by graphical and statistical methods to determine if these physical factors influenced migration patterns.

3.4 Steelhead Gillnet Marks

The presence of gillnet marks was recorded for all sampled steelhead. The mean nose-fork lengths of gillnet marked and unmarked steelhead were compared for each sex (Students t-test). Temporal trends in the gillnet mark rate were examined by pooling and plotting the percent of gill net marked steelhead by week.

3.5 Male and Female Steelhead Run Timing

The run timing of male and female steelhead was examined by plotting cumulative percent male and female steelhead by date over the duration of fence operation. The date of first arrival and median migration date past the fence for male and female steelhead was also compared. Finally, daily numbers of male and female steelhead migrating past the fence were plotted and compared using the two sample Kolmogorov-Smirnov test for distribution difference.

3.6 Upper Sustut River and Tyee Test Fishery Indices

The cumulative steelhead index at the Tyee Test Fishery has been used to indicate the relative abundance of steelhead and salmon migrating into the Skeena River (Cox-Rogers and Jantz 1993; Ward *et al.* 1993; Cox-Rogers 1994; Koski *et al.* 1995; Labelle *et al.* 1995). The cumulative steelhead index to August 10 is considered to indicate the relative abundance of early run Skeena River steelhead (upper Sustut River steelhead). This date was chosen as it was the last date that tagged upper Sustut River steelhead were observed in the Tyee Test Fishery (Parken *et al.* 1997).

In 1996, all field procedures used to enumerate the upper Sustut River steelhead population were standardized to reduce the variability resulting from the different enumeration methods utilized in previous years (Parken *et al.* 1997). The total number of steelhead counted through the Sustut River fence to September 30 was used for all inter-annual comparisons. Parken *et al.* (1997) found that the August 10 cumulative Tyee Test Fishery steelhead index correlated positively with and was a significant predictor of the Upper Sustut River steelhead population. The 2003 data point was added to the regression to determine if the August 10 Tyee Test Fishery index continued to be a significant predictor of the upper Sustut River steelhead fence count.

4.0 Results

4.1 Steelhead Enumeration

Between August 3 and September 30, 1,115 steelhead migrated through the upper Sustut River fence (Table 1; Appendix Tables 1, 2). An additional 50 steelhead were observed downstream of the fence and 3 steelhead migrated past the fence on the morning of October 1 making the estimated spawning escapement to the upper Sustut River 1,168 steelhead.

The first steelhead migrated through the fence on August 3 and by September 2, 50% of the run had passed (Figure 4; Table 1). In order to provide a historical context for the 2003 data, the annual dates of 50% migration along with the corresponding total fence counts to September 30 are presented in Table 1 for the years 1994 to 2003. Information prior to 1994 was not included due to the variability in enumeration methodology that existed during this period.

The date when 50% of the 2003 steelhead run migrated past the fence was the second earliest on record (Table 1). Also, the total steelhead fence count to September 30 was the highest recorded since enumeration methods were standardized and was well above the long-term average fence count (Table 1).

Table 1. Dates when 50% of the steelhead migrated through the fence and the total count to September 30, for the years 1994 to 2003.

Year	Date of 50% Migration	Fence Count	
1994	Aug-29	584	
1995	Sep-08	467	
1996	Sep-07	466	
1997	Sep-13	649	
1998	Sep-07	1064	
1999	Sep-17	731	
2000	Sep-07	377	
2001	Sep-16	756	
2002	Sep-02	812	
2003	Sep-02	1115	
Earliest 50% Migration Date	Aug-29	Minimum Count	377
Latest 50% Migration Date	Sep-17	Maximum Count	1115
		Mean Count	702

The pattern of steelhead migration past the fence in 2003 differed from past years (Figure 4). A higher percentage of the run moved through the fence during the third week of August and again during the first two weeks of September than has been witnessed during the 1994 to 2002 period (Figure 4).

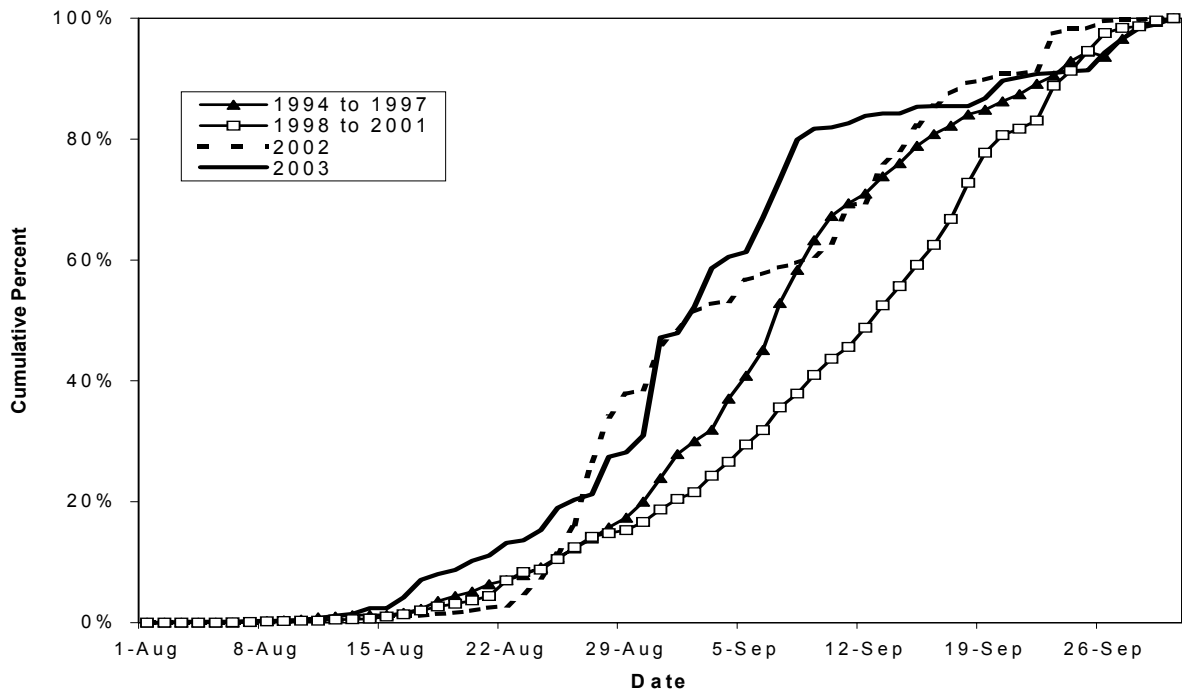


Figure 4. Daily cumulative percentage of upper Sustut River steelhead migrating past the fence for the years 1994 to 2003.

The observed steelhead handling mortality at the fence was 0.3% (3 steelhead) (Appendix Table 3). No consistent physical wounds or scars were noted for these fish.

Between July 30 and September 30, 1,106 chinook salmon, 4,992 sockeye salmon, 119 coho salmon, 21 bull trout, 12 resident rainbow trout and 55 Rocky Mountain whitefish migrated through the fence (Appendix Tables 1, 4). Sampling data for all chinook, sockeye and coho salmon are presented in Appendix Tables 5 to 8.

4.2 Steelhead Recaptures

Nine steelhead tagged at the Sustut River fence in 2001 were recaptured in 2003 (Table 2). Growth from the date of initial tagging to the date of recapture ranged from 40 to 75 mm and averaged 58 mm. The timing of arrival at the fence for recaptured fish ranged from 30 days earlier to 13 days later than in 2001. The average time of arrival at the fence was earlier in 2003 by 5 days. None of the steelhead tagged at the Sustut River fence in 2000 were recaptured in 2003 (Table 2) and no steelhead have been tagged since 2002.

Table 2. Tagged steelhead recaptured at the Sustut River fence during 2003.

Recapture Data					Tagging Data			
Date	Sex	NF Length (mm)	Tag Colour	Tag Number	Date	Location	Sex	NF Length (mm)
25-Aug-03	M?		Yellow	35581	24-Sep-01	Sustut Fence	F	580
28-Aug-03	F	785	Yellow	35639	25-Sep-01	Sustut Fence	F	720
30-Aug-03	F	830	Yellow	35379	17-Sep-01	Sustut Fence	F	770
03-Sep-03	F	700	Yellow	37199	22-Jul-03	Tyee Test Fish.		
06-Sep-03	F		Yellow	35135	04-Sep-01	Sustut Fence	F	670
07-Sep-03	M	800	Yellow	35343	16-Sep-01	Sustut Fence	F	760
07-Sep-04	F	710	Yellow	35327	15-Sep-01	Sustut Fence	F	650
19-Sep-03	F	695	Yellow	37190		Unknown		
20-Sep-03	F	770	Yellow	35588	24-Sep-01	Sustut Fence	F	730
21-Sep-03	F	725	Yellow	37017	28-Jul-03	Tyee Test Fish.		
22-Sep-03	F	830	Yellow	35201	09-Sep-01	Sustut Fence	F	755
28-Sep-03	F	810	Yellow	35306	15-Sep-01	Sustut Fence	F	745

A total of 756 steelhead were tagged at the fence in 2001. The nine fish recaptured in 2003 indicated that a minimum of 1.2% of the 2001 run returned as potential repeat spawners in 2003. Two female steelhead tagged at the Tyee Test Fishery on the lower Skeena River during 2003 were recovered at the fence. The time from initial tagging to recovery at the fence was 43 and 55 days.

4.3 Steelhead Migration and Physical Data

All environmental data along with a description of daily weather conditions are presented in Appendix Table 9. The daily maximum water temperature ranged from 3.5 to 21.5 and averaged 10.0 °C while daily maximum air temperature ranged from 2.0 to 32.0 and averaged 15.9 °C. Daily minimum and maximum water temperatures are shown graphically in Appendix Figure 1. Water levels, as indicated by staff gauge height, ranged from 0.210 to 0.485 and averaged 0.314 m.

Maximum daily water temperature and staff gauge height were plotted with steelhead migration through the fence (Figures 5, 6). Regression analysis indicated that neither daily water temperature (ANOVA: $F=0.1662$, $p=0.6849$) nor river level (ANOVA: $F=0.4381$, $p=0.5106$) significantly influenced steelhead movement past the fence. Since changed in environmental conditions may take some time to influence migration behavior, steelhead migration was lagged by 3 days (daily steelhead migration matched with physical data from 3 days

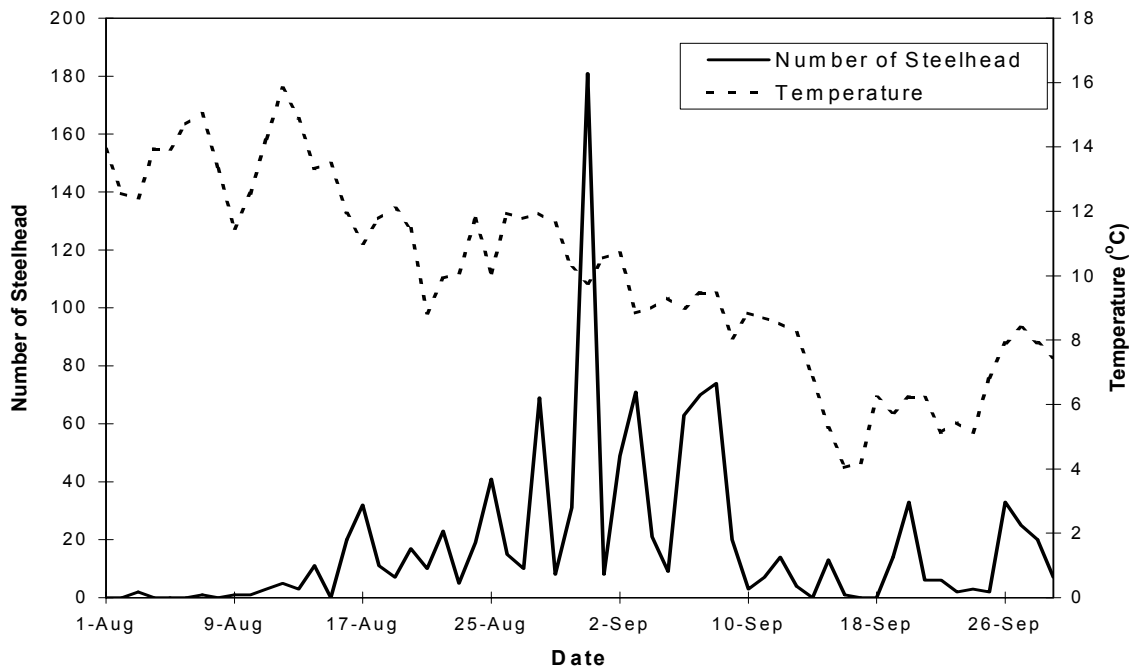


Figure 5. Daily maximum water temperatures and the number of steelhead migrating past the fence.

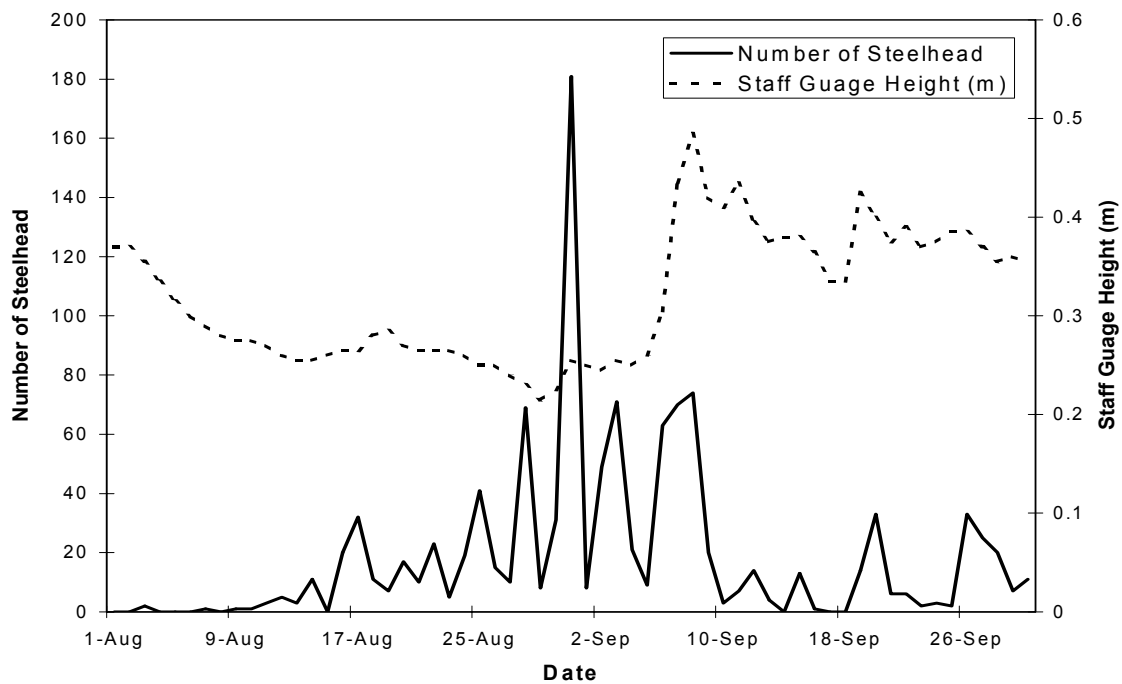


Figure 6. Daily staff gauge height and the number of steelhead migrating past the fence.

previous). Under these conditions, regression analysis revealed that river level had a significant effect on migration (ANOVA: $F=11.5376$, $p=0.001$) while water temperature had no effect (ANOVA: $F=0.0405$, $p=0.8413$) (Appendix Figure 2, 3).

4.4 Steelhead Length Distributions by Sex

Of the 1,118 steelhead (includes 3 fish that passed the fence on October 1) counted migrating through the fence, 468 (41.9%) were male and 650 (58.1%) were female making the ratio of female to male steelhead 1.39:1. A total of 85 male (18%) and 123 female (19%) steelhead were measured for nose-fork length. Male steelhead length ranged from 570 to 945 mm and averaged 780 mm while female steelhead length ranged from 625 to 890 mm and averaged 730 mm. The percent of the total number of steelhead measured at the fence was plotted by 20 mm increments of nose-fork length for each sex (Figure 7). Statistical analysis revealed that male steelhead were significantly larger than female steelhead (Student's t-test for unequal variance: $t=5.1949$; $p<0.05$).

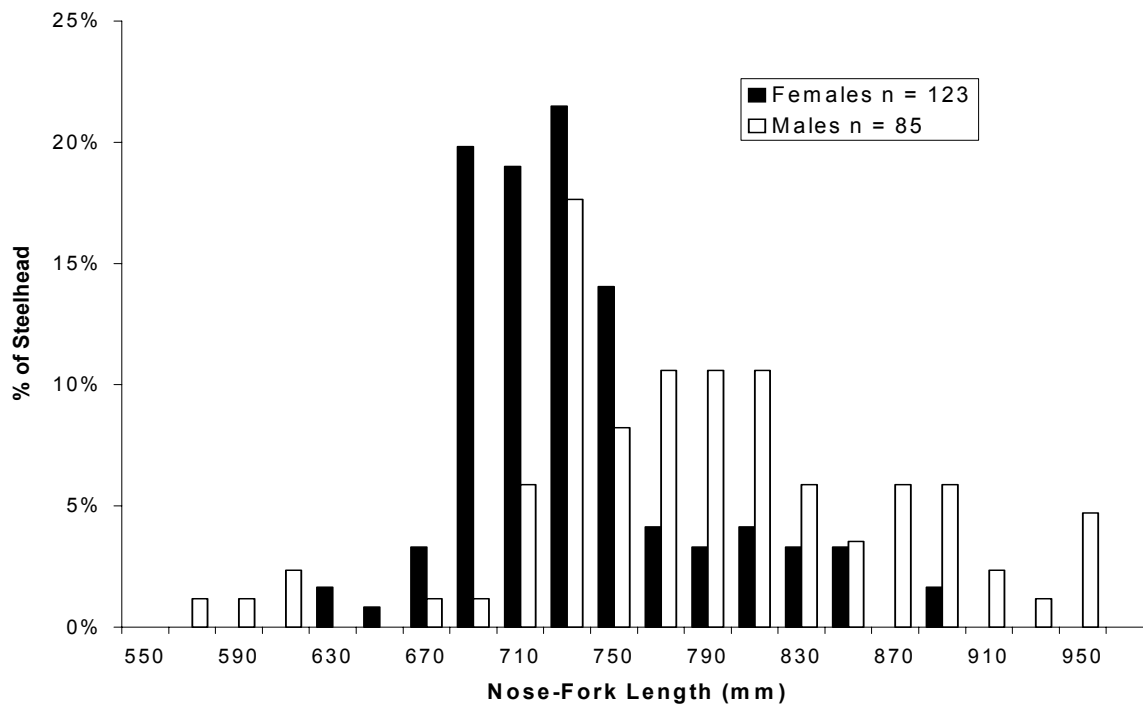


Figure 7. Percentage of male and female steelhead by 20 mm categories of nose-fork length.

4.5 Steelhead Gillnet Marks

Gillnet marks were present on 12.1% of all steelhead that were sampled at the fence. The percent of gillnet marked steelhead was pooled and plotted by statistical week (Figure 8). Statistical week definitions are outlined in Appendix Table 10. Weekly gillnet mark rates ranged from a low of 0% in statistical weeks 8-1 and 8-2, to a high of 15.8% in statistical week 8-4. Only one steelhead was sampled for length and gillnet marks during statistical week 9-3.

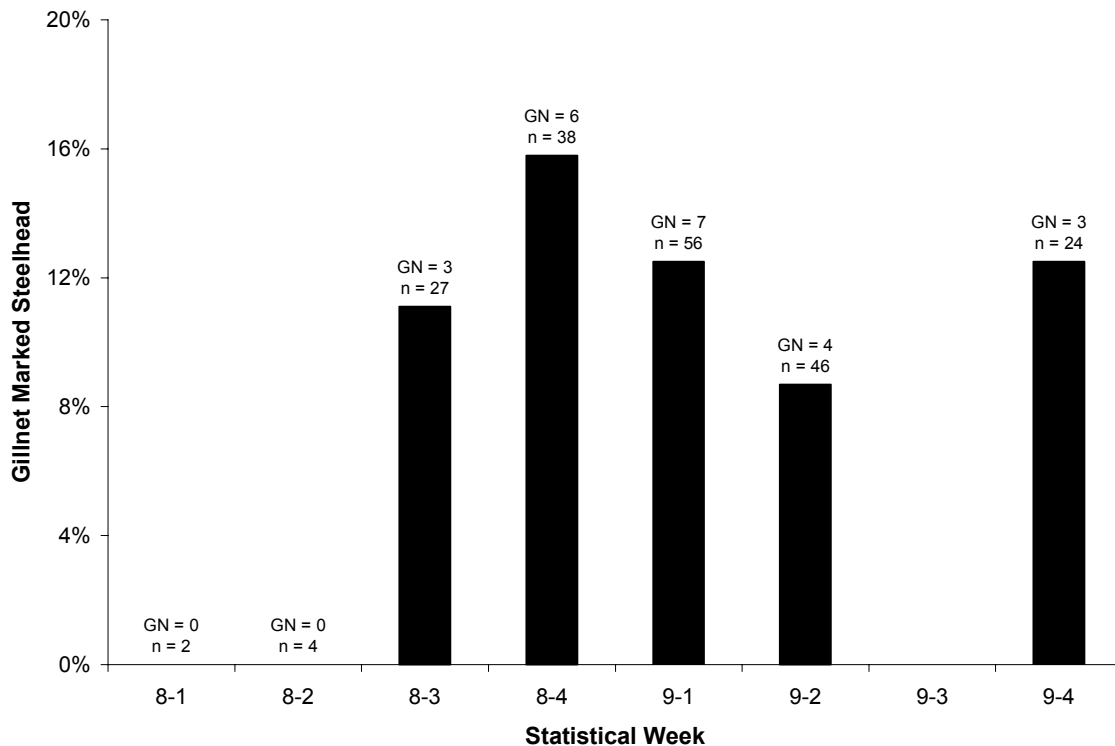


Figure 8. Percent of steelhead with gillnet marks by statistical week. GN = the number of gillnet marked steelhead and n = the total number of steelhead sampled each week.

A total of 8.3% of male steelhead and 14.8% of female steelhead sampled at the fence exhibited gillnet marks. While the average nose-fork length of gillnet marked male and female steelhead was less than the average nose-fork length of unmarked fish, the differences were not statistically significant (Males - Student's t-test: $t=1.1582$; $p=0.2908$) (Females - Student's t-test: $t=0.5504$; $p=0.5831$).

4.6 Male and Female Steelhead Run Timing

The first male and female steelhead passed through the fence on August 3 (Appendix Table 2) and the median migration date was September 2 for both sexes. The plot of daily cumulative percentage of male and female steelhead arriving at the fence revealed a similar migration pattern for both sexes (Figure 9). When the daily numbers of male and female steelhead migrating past the fence were plotted and compared, the two sample Kolmogorov-Smirnov test for distribution difference revealed no significant difference ($D=0.1639$; $P=0.3879$).

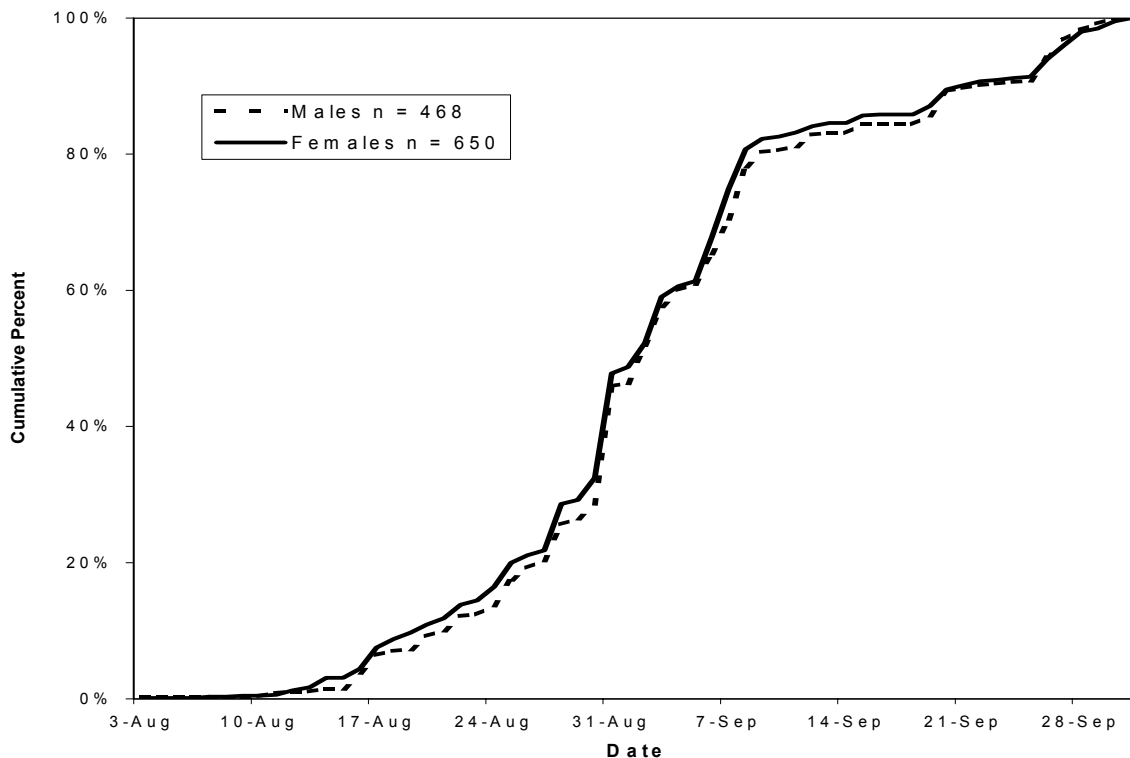


Figure 9. Daily cumulative percent of male and female steelhead migrating past the fence.

4.7. Steelhead Ages

A total of 225 scales taken from steelhead at the Sustut River fence were analyzed to determine age. The majority of the scales (178) were in good condition (code 1) while 6 were in poor condition (code 2) with the remaining scales exhibiting either regeneration, resorption or were difficult to age for other reasons (Appendix Table 11, 12). The number of freshwater annuli ranged from three to five with the majority of scales (72.8%) reflecting 4 years of freshwater growth (Appendix Table 13). The number of marine annuli ranged from one to

four with the majority of scales showing 2 years of marine growth. The most prevalent age was 4.2+ (56.1%) followed by 4.3+ (14.0%) (Appendix Table 13).

4.8 Upper Sustut River and Tyee Test Fishery Indices

The 2003 upper Sustut River steelhead fence count to September 30 and the cumulative Tyee Test Fishery index to August 10 were added to the historical regression relationship between these two values (Figure 10). With the addition of the new data point, the regression relationship was no longer statistically significant (ANOVA: $F=1.8787$, $p=0.1978$) indicating that the Tyee index does not function as a predictor of upper Sustut steelhead abundance.

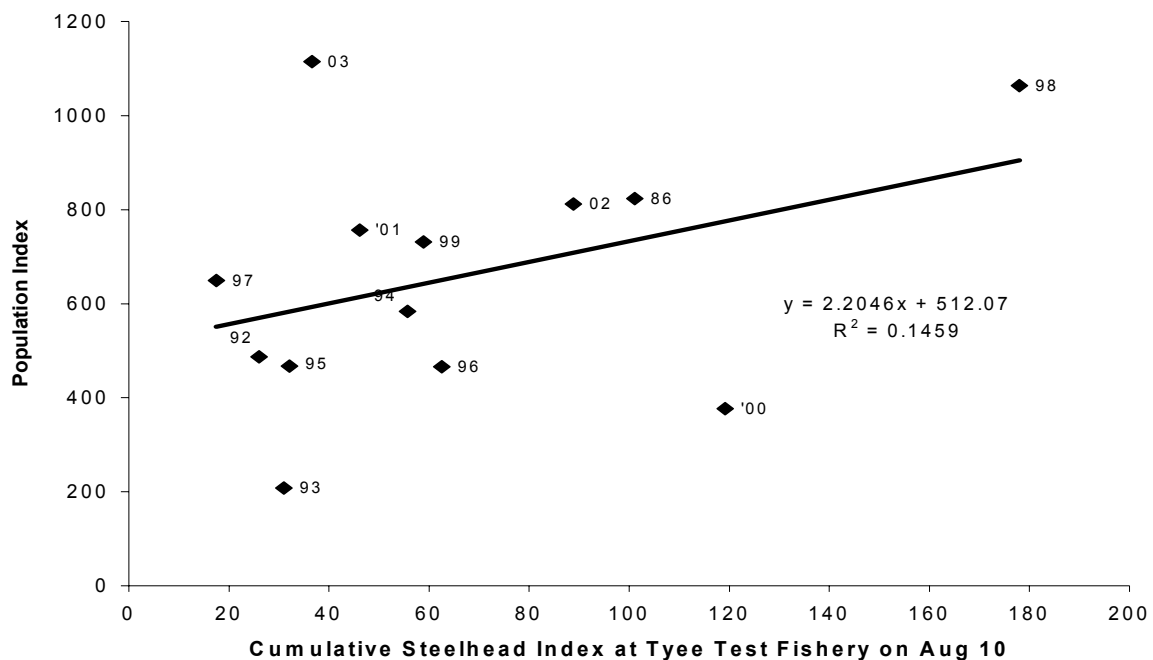


Figure 10. Linear relationship between the upper Sustut River steelhead fence count and the cumulative steelhead index at the Tyee Test Fishery on August 10.

5.0 Discussion

The 2003 upper Sustut River steelhead fence count to September 30 was 1,115 fish. This value is the highest since enumeration methods were standardized in 1994 and approximately 35% above the long-term average (Table 1). With the addition of the steelhead observed downstream of the fence prior to fence removal, plus those that passed the fence on the morning of October 1, the estimated spawning escapement for the 2003 upper Sustut River steelhead run was 1,168 fish. This value is above the estimated carrying capacity of the system (1036) which was determined using a habitat based productivity model (Tautz *et al.* 1992). This is only the second time since

monitoring began that the estimated carrying capacity has been reached. Parken *et al.* (1997) reviewed the early escapement data and concluded that the total population estimates fluctuated little between 1992 and 1996 and that all escapements up to 1996 were substantially below the carrying capacity. Since enumeration methods were standardized in 1994, annual fence counts have ranged from a high of 1,115 in 2003 to a low of 377 in 2000 (Table 3). This dramatic variability witnessed over such a short period indicates the vulnerability of the upper Sustut steelhead stock to fluctuations in natural and fishery related influences. While changing environmental conditions can influence survival rates it is more likely the number of steelhead intercepted in the various fisheries operating in the approaches to the Skeena River that effects the annual spawning population size and determines the level of subsequent production.

Between 1995 and 2003 the percentage of repeat spawners in the upper Sustut River steelhead spawning population has ranged from 0.4 to 5.2% and averaged 1.5% (Table 3). The estimated percentage of repeat spawners in 2003 was 1.2% and therefore slightly below the long-term average. Since 1996, annual average repeat spawner growth has ranged from 54 to 98 mm and averaged 72 mm (Table 3). The growth between spawning events for repeat spawning steelhead handled at the fence in 2003 was the second lowest on record (58 mm) and well below the long term average. This may be a result of the sex ratio of repeat spawners in 2003 as almost all repeat spawners were females and therefore smaller fish (Table 2).

Table 3. Historical upper Sustut River steelhead data for the years 1992 to 2003.

Year	Date of First Steelhead	Date of 50% Migration	Fence Count	Average Length (mm)		Ave. Rep Spawner Growth (mm)	% Repeat Spawner	% Handling Mort.	% Gillnet Marked			
				M	F				M	F	Total	
1992				777	721							23.0
1993				848	740							11.0
1994	Aug-08	Aug-29	584	824	737							2.0
1995	Aug-08	Sep-08	467	826	746		1.2	4.0				6.0
1996	Aug-17	Sep-07	466	829	739	67	1.3	2.8				14.0
1997	Aug-09	Sep-13	649	814	733	98	0.6	1.5	9.2	17.8		15.4
1998	Aug-03	Sep-07	1064	827	749	74		0.8	13.4	13.8		13.7
1999	Aug-17	Sep-17	731	848	756	81	2.5	0.3	6.1	9.9		8.5
2000	Aug-08	Sep-07	377	827	741	63	0.4	0.5	10.6	16.2		14.1
2001	Aug-15	Sep-16	756	864	771	65	2.5	1.9	10.1	14.5		12.8
2002	Aug-09	Sep-02	812			54	1.9	0.5	3.6	8.4		6.3
2003	Aug-03	Sep-02	1115	780	730	58	1.2	0.3	8.3	14.2		11.8
Minimum			377	777	721	54	0.4	0.3	3.6	8.4		2.0
Maximum			1115	864	771	98	2.5	4.0	13.4	17.8		23.0
Average			702	824	742	70	1.5	1.4	8.8	13.5		11.6

The date when 50% of the upper Sustut River steelhead population migrated past the fence was the second earliest since 1994 (Table 3). Since the timing of the return of steelhead to the Skeena River system may influence the rate of interception in commercial fisheries, the relationship between arrival at the fence and the total fence count was examined (Figure 11). The data set was restricted to include the years 1996 to 2003 as some additional variability in timing of fence operation existed in the earlier years. While a negative trend was apparent indicating that earlier arrival timing was associated with higher counts, the relationship was not statistically significant (ANOVA: $F=0.4620$; $P=0.5221$). Since past analysis has shown that the pattern of movement past the fence is often related to local environmental conditions including water temperature and river level it may not follow that relative timing at the fence site reflects the general pattern of arrival in other parts of the river. In 2001, 5 steelhead tagged at the Tye Test Fishery in the lower Skeena River arrived at the upper Sustut fence. Migration time between these 2 sites ranged from 37 to 62 days and averaged 52 days (Diewert 2002). This additional variability in migration timing suggests that there are many factors that determine when various portions of the run arrive in different sections of the river. The difficulty in predicting migration timing reveals the inherent risks that fishery managers face when attempting to schedule fisheries without impacting steelhead stocks. It seems that steelhead will always be vulnerable to interception and caution should be exercised when contemplating any opening.

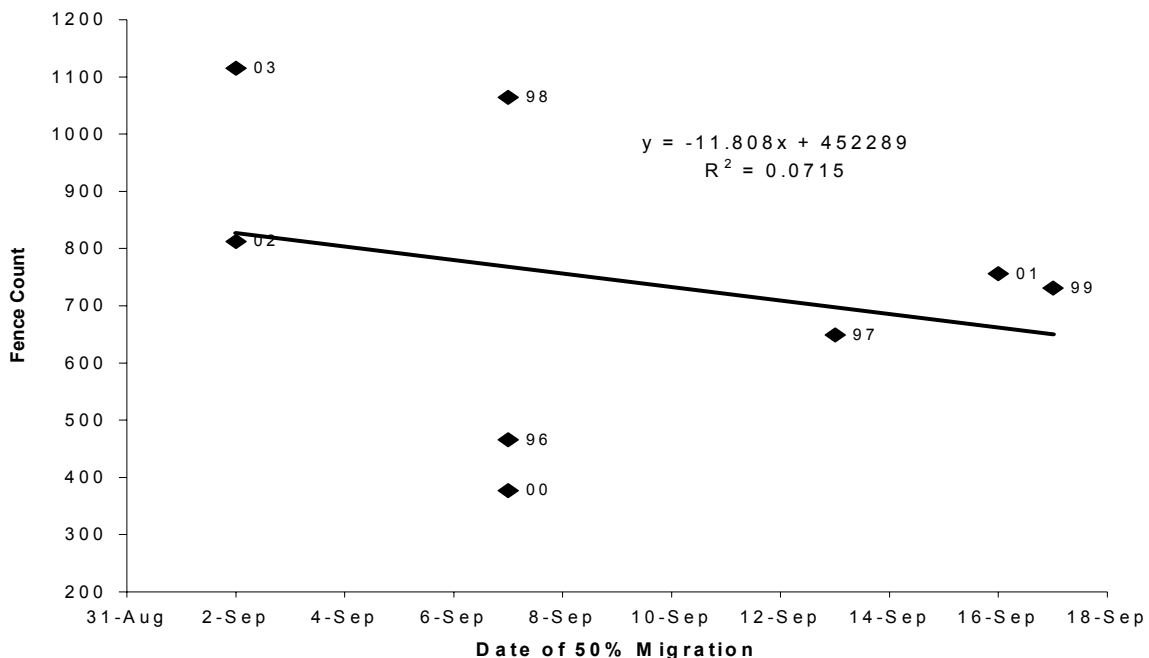


Figure 11. Linear relationship between the annual date of 50% migration and the total upper Sustut River steelhead fence count for the years 1996 to 2003.

The mortality rate for steelhead migrating past the fence in 2003 was 0.3%, which matched the lowest mortality rate on record and was well below the historical average of 1.5%. It is likely that the decision to minimize the handling of steelhead by collecting biological data from a subset of the population as well as the modifications made to the fence to reduce abrasion injuries contributed to the low mortality rate observed. It is important to also note that fish were exposed to additional stress due to the extended presence of numerous First Nation's members at the fence site. Many of these individuals were attempting to capture steelhead and other species and were also observed throwing rocks and other objects into the river. In light of these events, the low mortality rate observed was even more notable.

Reports from previous years indicated that water temperature and river height influenced steelhead movement (Siamoto 1995; Parken and Morten 1996). Results from this year's study indicated that neither parameter was significantly correlated with fish movement when analyzed on a same day time frame. However, when the daily steelhead migration was lagged by 3 days, river level was negatively correlated with steelhead movement past the fence while there was no relationship between water temperature and steelhead migration (Appendix Figures 2, 3).

In 2002, 58.1% of the steelhead migrating past the fence were female while 41.9% were male yielding a ratio of 1.39:1 females to males. The skewed sex ratio in favour of females is similar to that found in previous years (Parken *et al.* 1997; Williamson 1998, 1999a, 2000; Diewert 2000, 2002, 2003). Parken *et al.* (1997) postulated that this might have resulted from disproportionate sampling throughout the run during early studies. However, since 1995 all steelhead have been identified to sex and therefore the reported sex ratios accurately reflect those of the population. Hooton has indicated that past research found males dominant in the beginning of the run and females dominant near the end of the run (personal communication in Parken *et al.* 1997). This has not been the case in the upper Sustut during the past several years when females dominated throughout the run. It may be that gillnet fisheries targeting other species have selectively harvested male steelhead as their larger size and in some cases, secondary sexual characteristics, make them more susceptible to this gear type (Ricker 1975). Sandercock (1991) suggests that in theory, sex ratios should be 1:1 but that a high level of differential mortality is associated with both commercial and recreational fisheries, which are selective for larger fish and therefore males. If this is the case for upper Sustut steelhead, then years of intensive fishing as reflected by high gillnet mark rates should be associated with smaller average fish size. When the historical length data were plotted against the annual gillnet mark rate, a negative trend was indeed apparent but the relationship was not statistically significant (ANOVA: $F=1.5894$; $P=0.2391$) (Appendix Figure 4). However, when the historical gillnet mark rate was plotted with the annual percentage of upper Sustut steelhead that were female, a significant positive relationship was revealed (ANOVA: $F=9.1239$; $P=0.0165$) (Appendix Figure 5). This result supports the notion that gillnet fisheries are selectively removing males from the spawning population.

A total of 12.1% of all steelhead migrating past the fence exhibited gillnet marks. This falls in the middle of historical values which have ranged from 2.0 to 23.0% and averaged 11.5% (Table 3). Female steelhead exhibited a higher gillnet mark rate than males (14.8 and 8.3%, respectively). Past studies have found that gillnet marked males and females were significantly smaller than unmarked fish (e.g. Diewert 2002). While this was true again in 2003 the differences were not statistically significant. This may be the result of small sample sizes as only steelhead handled to obtain length and scale samples were included in the assessment.

Age analysis of upper Sustut River steelhead scales indicated that the majority (72.8%) spend more than four years in freshwater before migrating to the ocean. This life history pattern has implications for stock productivity since increased smolt age results in decreased fry-to-smolt survival as older smolts are exposed to mortality for additional years (Tautz *et al.* 1992).

With the addition of the 2003 data point, the upper Sustut River steelhead fence count was no longer significantly correlated with the cumulative Tyee Test Fishery index to August 10. As a result, the test fishery index does not function as a predictor of upper Sustut steelhead abundance. The variability that exists in the relationship may be the result of recent adjustments made to commercial, IFF and ESSR fishing plans. Over the past several years, fisheries have been re-designed to target large Skeena sockeye returns while minimizing the impact on coho and the majority of steelhead stocks. The resulting intensified effort during the early portion of the fishery coincides with the return migration of early summer run steelhead including the upper Sustut River stock. These changes in the intensity and timing of fisheries have likely introduced additional variability into the regression relationship.

5.1 The Importance of Continued Monitoring.

Commercial and recreational fisheries provide a vital contribution to food supplies, employment and culture. Without accurate stock assessments and their proper use in management, exploited fish populations can collapse, creating severe economic, social and ecological problems. Therefore, ensuring that stock assessment research progresses and that operational stock assessments use the best techniques for a given stock are fundamental for ensuring the sustainability of commercial and recreational fisheries (U.S. National Academy of Sciences 1998).

The validity of any stock assessment project depends on long term monitoring, which allows for the evaluation of decadal trends in population parameters. The study of the effects of fishing on stocks is essentially a concern with long-term processes. In intense fisheries, accurate estimates of stock parameters (stock size, age and size structure of the population etc.) are necessary to ensure proper regulation of the fishery (Gulland 1969). Feedback on the effects of management strategies is vital to determine if fishing plans were effective in protecting important stocks from interception. Since the upper Sustut

River steelhead stock is considered to be representative of all upper Skeena stocks, it is imperative that a rigorous and defensible assessment occur annually to present feedback to managers on the impact of interception fisheries on Skeena steelhead. This can only be done if consistent stock assessment data are collected using established, widely accepted methodologies. Following such methods ensures that the scientific advice given is based on figures about which there can be little dispute (Gulland 1983).

The upper Sustut steelhead assessment project began in 1986 and has been carried out using a consistent methodology since 1994. The project consists of a fishery independent survey, which offers the best opportunity for controlling sampling conditions over time and is considered by stock assessment experts to be the best choice for achieving a reliable index (U.S. National Academy of Sciences 1998). Continuing implementation of such a vital monitoring study is the only way to ensure that the interest of upper Skeena steelhead are not pushed aside as user groups pressure managers to increase fishing effort. Accurate and precise information on steelhead stock status must be readily available to determine the impact that expanded commercial fisheries designed to maximize the catch of other species will have on intercepted steelhead stocks. It is the responsibility of stock assessment and management biologists, and the agencies that fund this important work, to make certain that high quality monitoring projects such as the upper Sustut steelhead program, continue to be carried out annually.

6.0 Recommendations

1. Enumeration of the upper Sustut River steelhead population should continue to be carried out annually. The valuable time series of data that results from this project provides fisheries managers with information on abundance trends for all early run Skeena steelhead populations and provides feedback on the impact of fisheries on these important stocks. Biological sampling should continue as recommended by Parken and Morten (1996), thus maintaining the reliability of comparisons across years.
2. Efforts to visually enumerate steelhead below the fence prior to fence removal should continue. These counts provide the basis for estimating total steelhead spawning escapement to the upper Sustut River. Surveys should take place throughout the latter portion of the project to ensure that a count of steelhead below the fence is always available. A final count should be carried out as close to the date of fence removal as possible.
3. The relationship between the upper Sustut River steelhead fence count and the Tyee Test Fishery index should continue to be investigated. With the addition of the 2003 data the relationship was no longer statistically significant and therefore the cumulative Tyee Test Fishery index to August 10 was no longer a predictor of upper Sustut steelhead abundance. Since the degree of variability in the relationship differs considerably year to year, it is

recommended that the data be re-examined to determine if additional factors could be included to produce a new predictive model.

4. It is recommended that approximately 20% of the male and female steelhead migrating past the fence continue to be sampled for age and length. This compromise ensures that the valuable time series of biological data will continue while handling mortality remains at a low level. During 2003, weekly sample rates ranged from 3 to 34% for male steelhead and from 6 to 29% for female steelhead (Appendix Table 14) (statistical week 8-1 omitted due to small sample size). It is recommended that the sample rate be as consistent as possible throughout migration past the fence to minimize any bias associated with migration timing.
5. During periods of heavy rainfall, turbidity in the upper Sustut River near the fence site increases dramatically due to runoff from the road. It is recommended that all fish be removed from the trap box by dip net during these periods so that species and sex identification are not jeopardized by the poor conditions for visual monitoring.

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Mark Beere directed this study and provided editorial reviews and valuable comments for the final draft.

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8.0 Literature Cited

- Bustard, D. 1993. Adult steelhead studies in the upper Sustut River 1992. Unpublished manuscript prepared for British Columbia Ministry of Environment, Lands and Parks, Smithers, B.C.
- Cox-Rogers, S. 1994. Description of daily simulation model for the Area 4 (Skeena) commercial gillnet fishery. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 2256.
- Cox-Rogers, S. and L. Jantz. 1993. Recent trends in the catchability of sockeye salmon in the Skeena River gillnet test fishery and impacts on escapement estimation. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 2219.
- Diewert, R.E. 2001. Enumeration of adult steelhead in the upper Sustut River 2000. British Columbia Ministry of Water, Land and Air Protection. Fisheries Branch. Skeena Fisheries Report SK#128.
- Diewert, R.E. 2002. Enumeration of adult steelhead in the upper Sustut River 2001. British Columbia Ministry of Water, Land and Air Protection. Fisheries Branch. Skeena Fisheries Report SK#130.
- Diewert, R.E. 2003. Enumeration of adult steelhead in the upper Sustut River 2002. British Columbia Ministry of Water, Land and Air Protection. Fisheries Branch. Skeena Fisheries Report SK#134.
- Gulland, J.A. 1969. Manual of methods for fish stock assessment. Part 1. Fish population analysis. FAO Fisheries Series No. 3. FAO Manuals in Fisheries Science No. 4. 154p.
- Gulland, J.A. 1983. Fish stock assessment. A manual of basic methods. FAO/Wiley Series on Food and Agriculture. Volume 1. 223p.
- Koski, W.R., R.F. Alexander, and K.K. English. 1995. Distribution, timing, fate and numbers of coho salmon and steelhead returning to the Skeena watershed in 1994. Report by LGL Limited, Sidney, B.C., for Fisheries Branch, British Columbia Ministry of Environment, Lands and Parks, Victoria, B.C.
- Labelle, M., S. Pollard, R. Frith and K. English. 1995. Skeena River steelhead stock-assessment program: 1994 catch and escapement monitoring plan. British Columbia Ministry of Environment, Lands and Parks. Fisheries Branch. Fisheries Progress Report No. 44.

- McPhail, J.D. and R. Carveth. 1994. Field key the freshwater fishes of British Columbia. British Columbia Resource Inventory Committee Publication #44.
- Parken, C.K. and K.L. Morten. 1996. Enumeration of adult steelhead in the upper Sustut River 1995. British Columbia Ministry of Environment, Lands and Parks. Fisheries Branch. Skeena Fisheries Report SK#95.
- Parken, C.K., K.L. Morten, and D.Y. Atagi. 1997. Review of the escapement of adult steelhead to the upper Sustut River 1986, 1992-1996. British Columbia Ministry of Environment, Lands and Parks. Fisheries Branch. Skeena Fisheries Report SK#107.
- Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Bull. Fish. Res. Board. Can. 191: 382p.
- Saimoto, R.S. 1994. Enumeration of adult steelhead in the upper Sustut River 1993. British Columbia Ministry of Environment, Lands and Parks. Smithers, B.C., Skeena Fisheries Report SK#87.
- Saimoto, R.K. 1995. Enumeration of adult steelhead in the upper Sustut River 1994. Unpublished Manuscript prepared for British Columbia Ministry of Environment, Lands and Parks. Smithers, B.C.
- Sandercock, F.K. 1991. Life history of chinook salmon. *In: Pacific salmon life histories. Edited by C.Groot and L. Margolis.* University of British Columbia Press, Vancouver, B.C. pp 395-446.
- Spence, C.R., M.C. Beere and M.J. Lough. 1990. Sustut River steelhead investigations 1986. British Columbia Ministry of Environment, Lands and Parks. Smithers, B.C., Skeena Fisheries Report SK#64.
- Scott, W.B. and E.J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada, Bulletin No. 184, Ottawa, Ontario.
- Tautz, A.F., B.R. Ward and R.A. Ptolemy. 1992. Steelhead trout productivity and stream carrying capacity for rivers of the Skeena drainage. PSARC Working Papers S92 – 6 and 8.
- U.S. National Academy of Sciences. 1998. Improving fish stock assessments. Committee on Fish Stock Assessment Methods. Ocean Studies Board. National Academy Press, Washington, D.C.
- Ward, B.R., A.F. Tautz, S. Cox-Rogers and R.S. Hooton. 1993. Migration timing and harvest rates of the steelhead trout populations of the Skeena River system. PSARC Working Paper S93-06.

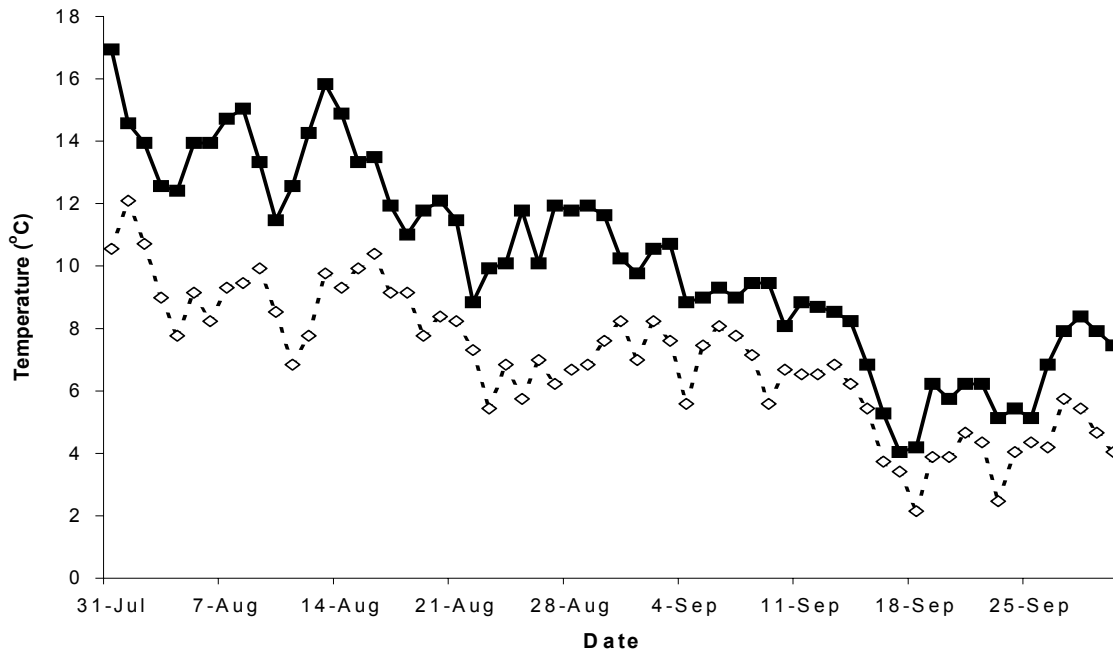
Williamson, C.J. 1998. Enumeration of Adult Steelhead in the Upper Sustut River 1997. British Columbia Ministry of Environment, Lands and Parks. Fisheries Branch. Skeena Fisheries Report SK #112.

Williamson, C.J. 1999a. Enumeration of Adult Steelhead in the Upper Sustut River 1998. British Columbia Ministry of Environment, Lands and Parks. Fisheries Branch. Skeena Fisheries Report SK #120.

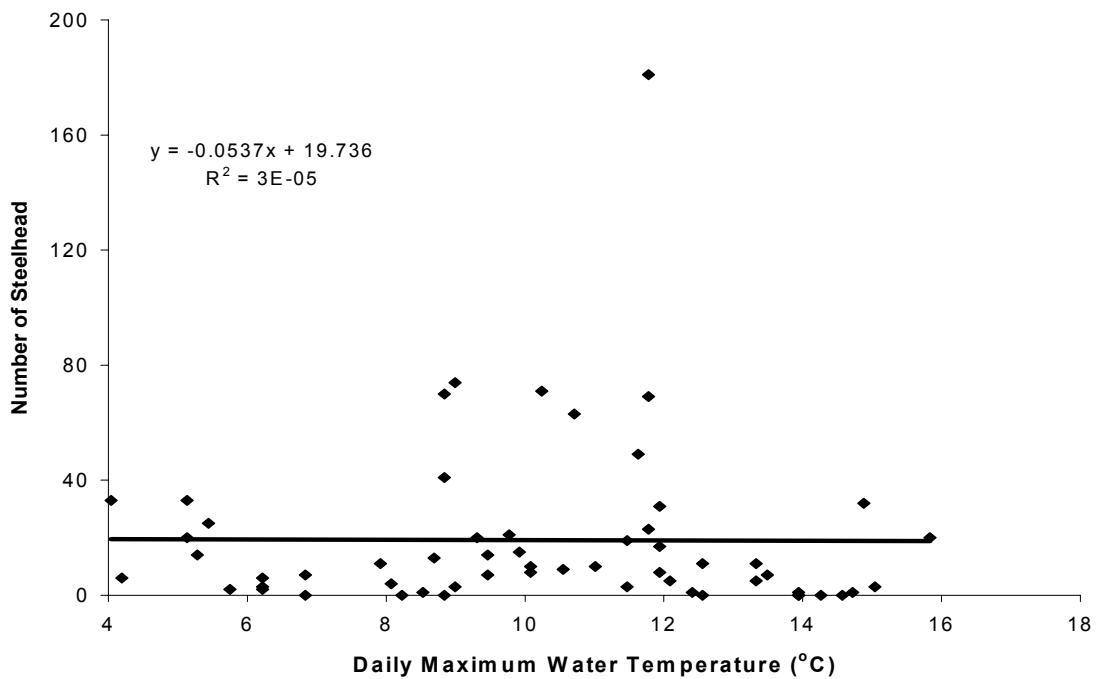
Williamson, C.J. 1999b. Enumeration of Adult Steelhead in the Upper Sustut River 1998. Appendix Report 1: Fence Modifications. British Columbia Ministry of Environment, Lands and Parks. Fisheries Branch. Skeena Fisheries Report SK #121.

Williamson, C.J. 2000. Enumeration of Adult Steelhead in the Upper Sustut River 1999. British Columbia Ministry of Environment, Lands and Parks. Fisheries Branch. Skeena Fisheries Report SK #126

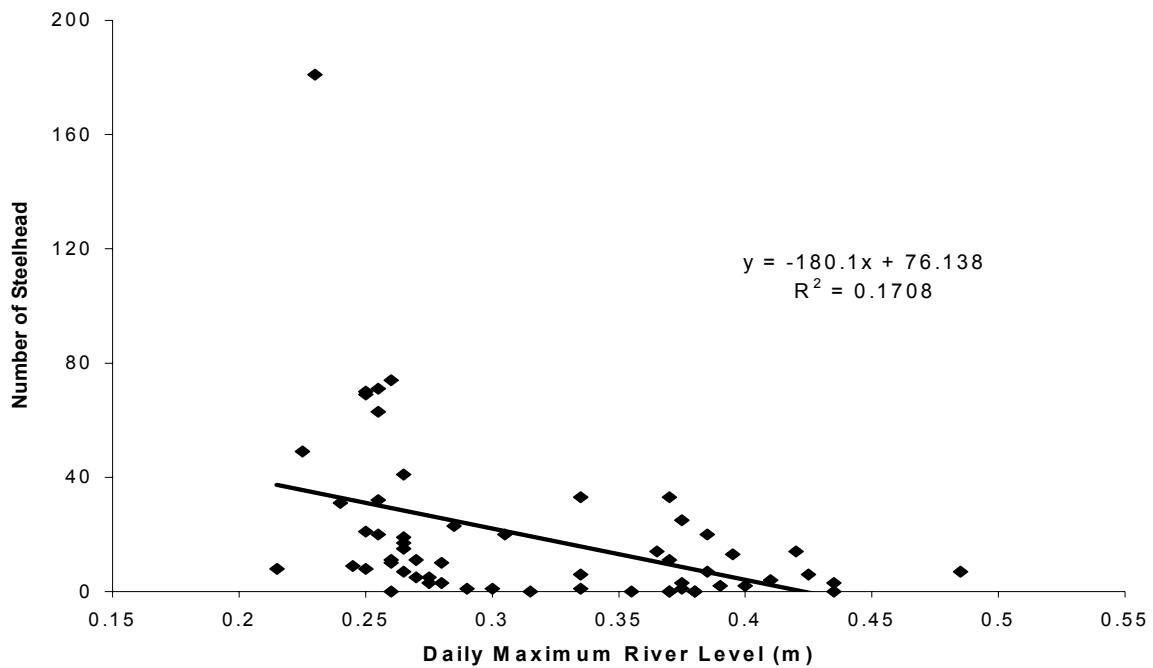
Appendix Figures



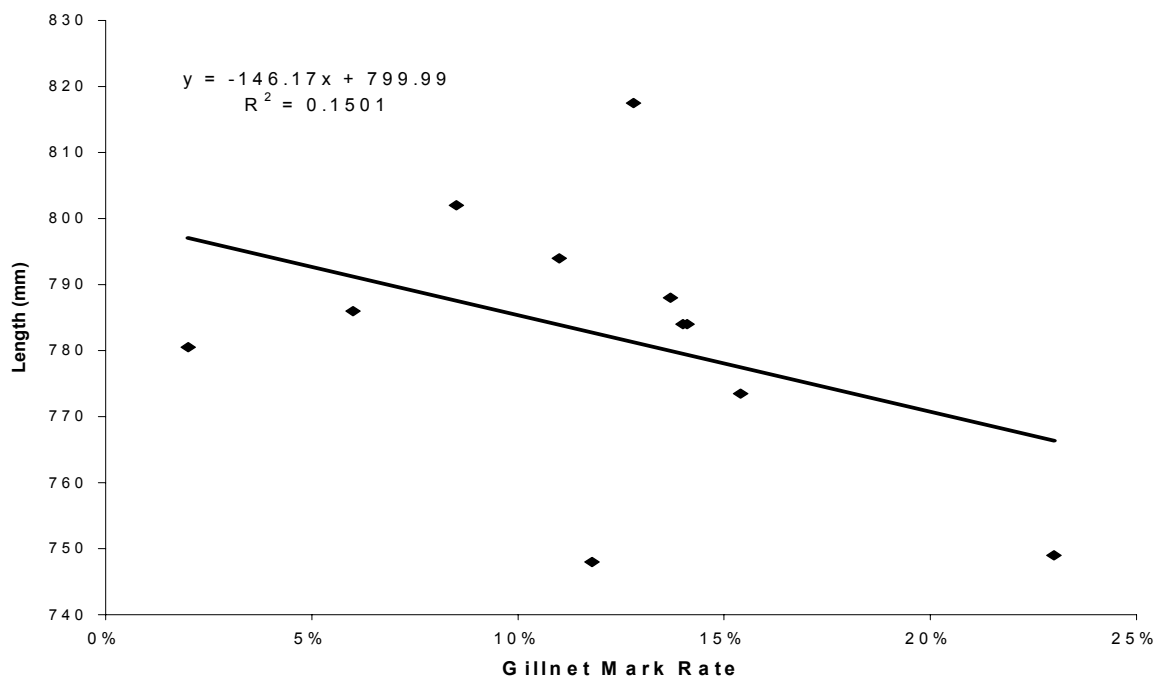
Appendix Figure 1. Daily minimum and maximum temperatures at the Sustut River fence, July 31 to September 30, 2003.



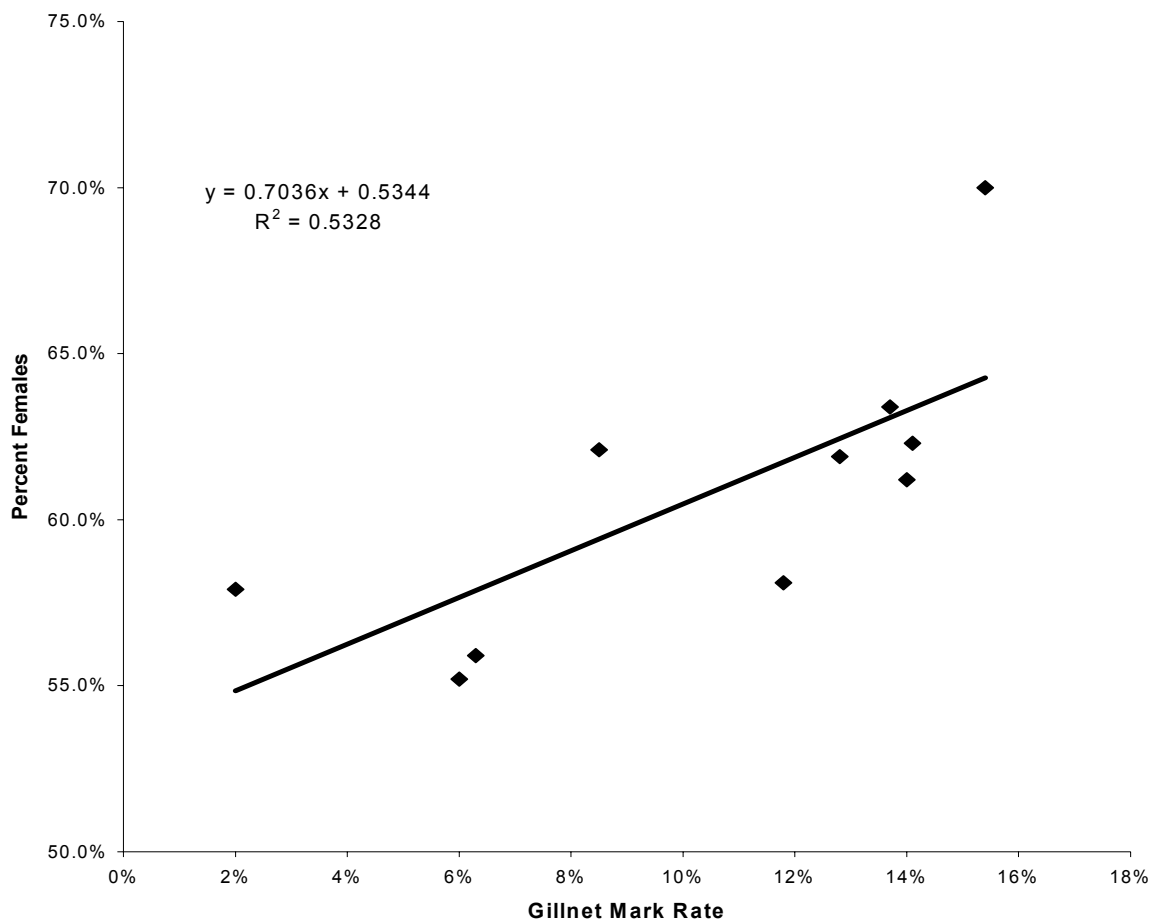
Appendix Figure 2. Linear relationship between water temperature and steelhead migration past the fence. Steelhead migration is lagged by 3 days.



Appendix Figure 3. Linear relationship between river level and steelhead migration past the fence. Steelhead migration is lagged by 3 days.



Appendix Figure 4. Linear relationship between the annual gillnet mark rate and average length of upper Sustut River steelhead for the years 1992 to 2003.



Appendix Figure 5. Linear relationship between the annual gillnet mark rate and percent of the upper Sustut steelhead run that was female for the years 1994 to 2003.

Appendix Tables

Appendix Table 1. Daily and cumulative totals of steelhead, rainbow trout, bull trout and Rocky Mountain whitefish migrating past the Sustut River fence, 2003.

Date	Steelhead		Rainbow Trout		Bull Trout		Whitefish	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
31-Jul	0	0	1	1	0	0	0	0
1-Aug	0	0	7	8	1	1	0	0
2-Aug	0	0	0	8	3	4	1	1
3-Aug	2	2	0	8	0	4	3	4
4-Aug	0	2	0	8	0	4	0	4
5-Aug	0	2	1	9	1	5	2	6
6-Aug	0	2	0	9	0	5	1	7
7-Aug	1	3	1	10	0	5	1	8
8-Aug	0	3	0	10	0	5	0	8
9-Aug	1	4	0	10	0	5	0	8
10-Aug	1	5	0	10	0	5	2	10
11-Aug	3	8	0	10	1	6	2	12
12-Aug	5	13	0	10	1	7	4	16
13-Aug	3	16	0	10	0	7	2	18
14-Aug	11	27	0	10	0	7	4	22
15-Aug	0	27	0	10	0	7	3	25
16-Aug	20	47	0	10	1	8	4	29
17-Aug	32	79	0	10	0	8	0	29
18-Aug	11	90	0	10	0	8	3	32
19-Aug	7	97	0	10	0	8	0	32
20-Aug	17	114	0	10	0	8	2	34
21-Aug	10	124	0	10	0	8	1	35
22-Aug	23	147	0	10	0	8	0	35
23-Aug	5	152	0	10	0	8	2	37
24-Aug	19	171	0	10	0	8	0	37
25-Aug	41	212	0	10	0	8	1	38
26-Aug	15	227	0	10	0	8	0	38
27-Aug	10	237	0	10	0	8	2	40
28-Aug	69	306	0	10	0	8	1	41
29-Aug	8	314	0	10	0	8	4	45
30-Aug	31	345	0	10	0	8	0	45
31-Aug	181	526	0	10	0	8	1	46
1-Sep	8	534	0	10	0	8	1	47
2-Sep	49	583	0	10	0	8	3	50
3-Sep	71	654	1	11	1	9	3	53
4-Sep	21	675	0	11	1	10	0	53
5-Sep	9	684	0	11	0	10	0	53
6-Sep	63	747	0	11	1	11	0	53
7-Sep	70	817	0	11	1	12	0	53
8-Sep	74	891	0	11	0	12	0	53
9-Sep	20	911	0	11	0	12	0	53
10-Sep	3	914	1	12	0	12	0	53
11-Sep	7	921	0	12	0	12	0	53

Appendix Table 1. (continued)

Date	Steelhead		Rainbow Trout		Bull Trout		Whitefish	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
12-Sep	14	935	0	12	0	12	1	54
13-Sep	4	939	0	12	2	14	0	54
14-Sep	0	939	0	12	0	14	0	54
15-Sep	13	952	0	12	2	16	0	54
16-Sep	1	953	0	12	0	16	0	54
17-Sep	0	953	0	12	0	16	0	54
18-Sep	0	953	0	12	0	16	0	54
19-Sep	14	967	0	12	1	17	0	54
20-Sep	33	1000	0	12	0	17	0	54
21-Sep	6	1006	0	12	0	17	0	54
22-Sep	6	1012	0	12	1	18	0	54
23-Sep	2	1014	0	12	0	18	0	54
24-Sep	3	1017	0	12	0	18	0	54
25-Sep	2	1019	0	12	1	19	0	54
26-Sep	33	1052	0	12	1	20	0	54
27-Sep	25	1077	0	12	0	20	0	54
28-Sep	20	1097	0	12	0	20	0	54
29-Sep	7	1104	0	12	0	20	0	54
30-Sep	11	1115	0	12	1	21	0	54
1-Oct	3	1118	0	12	0	21	1	55

Appendix Table 2. Steelhead sampling data from the Sustut River fence, 2003.

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
3-Aug	8:15	F	725	no	70251	1~41		couple minor surface scratches on back
3-Aug	17:00	M?	380	no				very small
7-Aug	17:00	F						
9-Aug	19:00	F		yes				
10-Aug	17:30	M?		?				passed through box without positive ID
11-Aug	8:30	F						
11-Aug	14:00	M						small injury at base of dorsal fin
11-Aug	17:00	M						
12-Aug	14:30	M						small gash on top of nose
12-Aug	15:30	F						
12-Aug	17:30	F						
12-Aug	18:00	F	790	no	70251	2~42		
12-Aug	20:00	F						
13-Aug	8:45	F						small gash in front of dorsal fin
13-Aug	15:00	F						
13-Aug	16:30	F						small gash in front of dorsal fin
14-Aug	8:30	M						
14-Aug	8:30	F						
14-Aug	8:30	F						
14-Aug	10:45	F						
14-Aug	14:45	M						
14-Aug	14:45	F						
14-Aug	14:45	F						
14-Aug	14:45	F						
14-Aug	17:00	F						
14-Aug	17:00	F						scraped up nose
14-Aug	17:00	F						
16-Aug	9:00	M	860	no	70251	3~43		
16-Aug	9:00	F		yes				spot on nose
16-Aug	9:00	F						
16-Aug	9:00	M						
16-Aug	9:00	M						
16-Aug	9:00	M						
16-Aug	9:00	M						
16-Aug	11:45	F						clean
16-Aug	11:45	F						clean
16-Aug	17:00	M	730	no	70251	4~44		
16-Aug	17:00	F	735	no	70251	5~45		
16-Aug	17:00	F						
16-Aug	17:00	F						
16-Aug	17:00	F						
16-Aug	17:00	F		yes				
16-Aug	17:00	M		yes				
16-Aug	17:00	M						
16-Aug	17:00	M						
16-Aug	17:00	M						
16-Aug	17:00	M						
17-Aug	9:00	M						

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
17-Aug	9:00	M						
17-Aug	9:00	M	850	no	70251	6~46		
17-Aug	9:00	F	720	no	70251	7~47		
17-Aug	14:30	F						
17-Aug	14:30	F						
17-Aug	14:30	M						
17-Aug	15:00	M						
17-Aug	15:00	M						
17-Aug	15:00	M						
17-Aug	15:00	F						
17-Aug	15:00	F						
17-Aug	15:00	F						
17-Aug	15:00	F	675	no	70251	8~48		
17-Aug	15:00	M	880	no	70251	9~49		
17-Aug	15:00	M						
17-Aug	15:00	M						
17-Aug	15:00	F		yes				
17-Aug	15:00	F		yes				
17-Aug	15:00	F	720	no	70251	10~50		
17-Aug	15:00	F						
17-Aug	15:00	F						
17-Aug	15:00	F						
17-Aug	15:00	M	755	no	70252	1~41		
17-Aug	15:00	F						
17-Aug	15:00	F						wound on head
17-Aug	15:00	F						
17-Aug	15:00	F						
17-Aug	15:00	F	770	no	70252	2~42		
17-Aug	15:00	M						
17-Aug	15:00	F						
17-Aug	15:00	F						
18-Aug	8:45	M						
18-Aug	8:45	M						
18-Aug	8:45	F						
18-Aug	14:15	M	715	no	70252	3~43		
18-Aug	14:15	F						
18-Aug	14:15	F	730	no	70252	4~44		
18-Aug	14:15	F	795	no	70252	5~45		
18-Aug	14:15	F	740	no	70252	6~46		
18-Aug	14:15	F	765	no	70252	7~47		3" scar on left side at base of tail
18-Aug	14:15	F	700	no	70252	8~48		
18-Aug	16:30	F						
19-Aug	16:00	M	780	no	70252	9~49		
19-Aug	16:45	F						
19-Aug	17:45	F	630	yes	70252	10~50		
19-Aug	17:45	F	745	no	70254	1~41		old scar (2") above scale area on left side
19-Aug	17:45	F	680	no	70254	2~42		
19-Aug	17:45	F	730	no	70254	3~43		
19-Aug	17:45	F		yes				

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
20-Aug	15:15	M						
20-Aug	15:15	F						
20-Aug	15:15	F						
20-Aug	16:00	M	835	no	70254	4~44		half of anal fin missing
20-Aug	16:00	M	795	no	70254	5~45		
20-Aug	16:00	M	695	yes	70254	6~46		
20-Aug	16:00	F						
20-Aug	16:00	M?		?				shot through while exit gate open
20-Aug	18:00	M						
20-Aug	18:45	M						
20-Aug	18:45	M						
20-Aug	18:45	M						
20-Aug	18:45	F						
20-Aug	18:45	F		yes				
20-Aug	18:45	F		yes				
20-Aug	18:45	F		yes				
20-Aug	18:45	F		yes				
21-Aug	8:30	F						
21-Aug	8:30	F						
21-Aug	8:30	F						
21-Aug	8:30	F						
21-Aug	17:45	F						
21-Aug	17:45	F						
21-Aug	18:00	M						
21-Aug	18:45	M						
21-Aug	19:30	M						
21-Aug	19:30	M						
22-Aug	9:00	F						
22-Aug	9:00	M		yes				
22-Aug	9:00	M						
22-Aug	15:00	M						
22-Aug	15:00	M						
22-Aug	15:00	F						scratch on the top of head
22-Aug	15:00	F		yes				
22-Aug	15:00	F		yes				
22-Aug	15:00	F						
22-Aug	15:00	F						
22-Aug	15:00	F						
22-Aug	17:00	M						
22-Aug	17:00	M						
22-Aug	17:00	M						
22-Aug	17:00	F						
22-Aug	17:00	F		yes				
22-Aug	18:15	M						
22-Aug	18:15	M						
22-Aug	18:15	F						
22-Aug	19:00	M						
22-Aug	19:00	F						
22-Aug	19:00	F						

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
25-Aug	15:00	F						
25-Aug	15:00	F						
25-Aug	16:00	M						
25-Aug	16:00	M	920	no	70255	6~46		
25-Aug	16:00	M						
25-Aug	16:00	M						
25-Aug	16:00	M?		no			yes yellow	35581
25-Aug	16:00	F						
25-Aug	16:00	F						
25-Aug	16:00	F						a couple marks across back
25-Aug	17:00	M	795	no	70255	7~47		
25-Aug	17:00	F	725	no	70255	8~48		
25-Aug	18:00	F	680	no	70255	9~49		
25-Aug	18:00	F	730	yes	70255	10~50		
25-Aug	18:00	F	625	no	70256	1~41		
25-Aug	18:00	M	735	no	70256	2~42		
25-Aug	19:00	M	740	no	70256	3~43		
26-Aug	15:45	F	700	no	70256	4~44		
26-Aug	15:45	M	755	no	70256	5~45		
26-Aug	15:45	F	700	yes	70256	6~46		
26-Aug	15:45	M						
26-Aug	15:45	F						
26-Aug	15:45	M						
26-Aug	15:45	F						
26-Aug	15:45	M						
26-Aug	15:45	F						
26-Aug	16:00	M						
26-Aug	16:00	M						
26-Aug	16:00	F						
26-Aug	17:45	F						
26-Aug	17:45	M						
26-Aug	17:45	M						
27-Aug	15:30	M						
27-Aug	15:30	F						
27-Aug	16:30	M						
27-Aug	16:30	M						
27-Aug	16:30	F						
27-Aug	16:45	F						
27-Aug	17:30	M						
27-Aug	17:30	F						
27-Aug	17:30	F						
27-Aug	17:45	M	890	no	70256	7~47		
28-Aug	15:30	M						
28-Aug	15:30	M						
28-Aug	15:30	M						
28-Aug	15:30	M						
28-Aug	15:30	M		yes				
28-Aug	15:30	F						
28-Aug	15:30	F						

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
28-Aug	16:00	F		yes				
28-Aug	19:45	F						
28-Aug	19:45	F						
28-Aug	19:45	F						
28-Aug	19:45	F						
28-Aug	19:45	F						
28-Aug	19:45	M						
28-Aug	19:45	M						
28-Aug	19:45	M	710	no	70257	8~48		clean
28-Aug	19:45	F	790	no	70257	9~49		
28-Aug	19:45	F	785	no	70257	10~50	yes	yellow 35639
28-Aug	19:45	F	730	no	70258	1~41		clean
28-Aug	19:45	M	755	no	70258	2~42		
29-Aug	14:30	M	610	yes	70258	3~43		
29-Aug	18:45	M						
29-Aug	18:45	M						
29-Aug	18:45	M						
29-Aug	18:45	F						
29-Aug	18:45	F						
29-Aug	18:45	F	740	yes	70258	4~44		
29-Aug	19:45	F						
30-Aug	8:45	M						
30-Aug	8:45	F						
30-Aug	8:45	F						
30-Aug	17:00	M						
30-Aug	17:00	M						
30-Aug	17:00	M						
30-Aug	17:00	M						
30-Aug	17:00	M						
30-Aug	17:00	M						
30-Aug	17:00	F	830				yes	yellow 35379
30-Aug	17:00	F						
30-Aug	17:00	F						
30-Aug	17:00	F						
30-Aug	17:00	F						
30-Aug	17:00	F						
30-Aug	17:00	F						
30-Aug	17:00	F						
30-Aug	17:00	F						
30-Aug	17:00	F						
30-Aug	17:00	F		yes				
30-Aug	17:00	F		yes				
30-Aug	17:15	M	820	no	70258	5~45		A fighter!
30-Aug	17:15	F	700	no	70258	6~46		
30-Aug	17:15	M	945	no	70258	7~47		3" scar, left side
30-Aug	17:15	F	690	no	70258	8~48		lots of scars

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
31-Aug	19:15	M						
31-Aug	19:15	M						
31-Aug	19:15	M		yes				
31-Aug	19:15	M						
31-Aug	19:15	M						
31-Aug	19:15	M						
31-Aug	19:15	M						
31-Aug	19:15	M						
31-Aug	19:15	F						
31-Aug	19:15	F						
31-Aug	19:15	F		yes				
31-Aug	19:15	F						
31-Aug	19:15	F						
31-Aug	19:15	F						
31-Aug	19:15	F						
31-Aug	19:15	F						
31-Aug	19:15	F						
31-Aug	19:15	F		yes				
31-Aug	20:30	M		yes				
31-Aug	20:30	M						
31-Aug	20:30	M						
31-Aug	20:30	M						
31-Aug	20:30	M						
31-Aug	20:30	M						
31-Aug	20:30	M		yes				
31-Aug	20:30	F						
31-Aug	20:30	F						
31-Aug	20:30	F						
31-Aug	20:30	F						
31-Aug	20:30	F						
31-Aug	20:30	F						
31-Aug	20:30	F		yes				
1-Sep	15:00	M	595	no	70284	7~47		
1-Sep	15:00	F		no	70284	8~48		
1-Sep	15:00	F		yes	70284	9~49		
1-Sep	15:00	F						
1-Sep	16:30	M						
1-Sep	16:30	F						
1-Sep	18:15	F						
1-Sep	19:30	F						
2-Sep	9:05	M						
2-Sep	9:05	M						
2-Sep	9:05	M						
2-Sep	9:05	M						

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
2-Sep	9:05	M						
2-Sep	9:05	M						
2-Sep	9:05	F						
2-Sep	9:05	F						
2-Sep	9:05	F						
2-Sep	9:05	F						
2-Sep	9:05	F						
2-Sep	9:05	F						
2-Sep	9:15	M	790	no	70262	10~50		
2-Sep	9:15	M	760	no	70263	1~41		
2-Sep	9:15	F	680	no	70263	2~42		
2-Sep	9:15	F	710	no	70263	3~43		
2-Sep	9:15	M	680	no	70263	4~44		
2-Sep	9:15	M	730	no	70263	5~45		
2-Sep	9:15	M	760	no	70263	6~46		
2-Sep	9:15	M	760	no	70263	7~47		
2-Sep	9:15	M	710	no	70263	8~48		
2-Sep	9:15	F	710	no	70263	9~49		
2-Sep	9:45	M						
2-Sep	9:45	M						
2-Sep	9:45	M						
2-Sep	9:45	M						
2-Sep	9:45	M						
2-Sep	9:45	M						
2-Sep	9:45	M						
2-Sep	9:45	M						
2-Sep	9:45	M						
2-Sep	9:45	M						
2-Sep	9:45	F						
2-Sep	9:45	F						
2-Sep	9:45	F						
2-Sep	10:55	F						
2-Sep	15:15	F	640	no	70263	10~50		
2-Sep	15:15	M						
2-Sep	15:15	F	710	no	70264	1~41		
2-Sep	15:15	F						
2-Sep	15:15	F						
2-Sep	15:15	F						
2-Sep	18:50	M						
2-Sep	18:50	F						
2-Sep	19:20	M						
2-Sep	19:20	M						
2-Sep	19:20	F						
2-Sep	19:20	F						
2-Sep	19:20	F		yes				
3-Sep	9:10	M		yes				
3-Sep	9:10	M						
3-Sep	9:10	M						
3-Sep	9:10	M						

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
3-Sep	18:30	M						
3-Sep	19:05	F	710	no	70264	7~47		
3-Sep	19:05	F	750	no	70264	8~48		
3-Sep	19:05	F	710	no	70264	9~49		
3-Sep	19:05	F	720	no	70264	10~50		
3-Sep	19:05	M	750	no	70265	1~41		torn gill
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
3-Sep	19:30	F						
4-Sep	9:25	M	730	no	70265	2~42		
4-Sep	9:25	M	780	no	70265	3~43		
4-Sep	9:25	M	840	no	70265	4~44		
4-Sep	9:25	F	740	yes	70265	5~45		
4-Sep	9:25	F	840	no	70265	6~46		
4-Sep	9:25	F	690	no	70265	7~47		
4-Sep	9:25	M	880	no	70265	8~48		
4-Sep	9:25	F	680	no	70265	9~49		Old scars on left side
4-Sep	9:25	M	730	no	70265	10~50		
4-Sep	9:25	M						large scrape behind the head
4-Sep	9:25	F						
4-Sep	9:25	F						
4-Sep	18:15	M						
4-Sep	18:15	M						
4-Sep	18:15	M						
4-Sep	18:15	F						
4-Sep	18:15	F						
4-Sep	19:00	F						
4-Sep	19:00	F						
4-Sep	19:30	M						
4-Sep	19:30	M						
5-Sep	18:30	M						
5-Sep	18:30	M						
5-Sep	18:30	M						
5-Sep	18:30	M						
5-Sep	18:30	F						
5-Sep	18:30	F						
5-Sep	18:30	F						
5-Sep	18:30	F						
5-Sep	18:45	F	700	no	70266	1~41		
6-Sep	9:00	F						

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
6-Sep	16:30	F						
6-Sep	16:30	F		yes				
6-Sep	16:30	F	730	no	70266	9~49		
6-Sep	16:30	M	940	yes	70266	10~50		bright red sides
6-Sep	16:30	F	705	no	70287	1~41		
6-Sep	16:30	F	745	yes	70287	2~42		
6-Sep	18:30	M						
6-Sep	18:30	M						
6-Sep	18:30	F						
6-Sep	18:30	F						
6-Sep	18:30	F						
6-Sep	19:00	F						
6-Sep	19:00	F						
7-Sep	9:00	M						
7-Sep	9:00	M						
7-Sep	9:00	M						
7-Sep	9:00	M						
7-Sep	9:00	M						
7-Sep	9:00	M						
7-Sep	9:00	M						
7-Sep	9:00	M		yes				
7-Sep	9:00	M		yes				
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F						
7-Sep	9:00	F		yes				
7-Sep	9:00	F		yes				
7-Sep	9:00	F		yes				
7-Sep	9:30	M	750	no	70287	3~43		
7-Sep	9:30	M	725	no	70287	4~44		
7-Sep	9:30	F	760	no	70287	5~45		
7-Sep	9:30	F	750	no	70287	6~46		
7-Sep	9:30	F	850	no	70287	7~47		
7-Sep	9:30	F	680	no	70287	8~48		
7-Sep	9:30	F	685	yes	70287	9~49		

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
7-Sep	9:30	F	705	no	70287	10~50		
7-Sep	9:30	F	740	no	70288	1~41		
7-Sep	10:30	M						
7-Sep	10:30	M						
7-Sep	10:30	M						
7-Sep	10:30	F						
7-Sep	10:30	F						
7-Sep	10:30	F						
7-Sep	10:30	F		yes				
7-Sep	11:45	M	880	no	70288	2~42		
7-Sep	14:45	M						
7-Sep	14:45	M						
7-Sep	14:45	M	800	no			yes yellow 35343	top of tail missing
7-Sep	14:45	M						
7-Sep	14:45	F						
7-Sep	14:45	F						
7-Sep	14:45	F						
7-Sep	14:45	F		yes				
7-Sep	14:45	F	710	no			yes yellow 35327	
7-Sep	15:40	F						
7-Sep	16:30	M						
7-Sep	16:30	M						
7-Sep	16:30	M						
7-Sep	16:30	F						
7-Sep	16:30	F						
7-Sep	16:30	F						
7-Sep	17:30	F						
7-Sep	19:00	F	880	no	70288	3~43		
7-Sep	19:00	F	720	no	70288	4~44		
7-Sep	19:00	F	720	no	70288	5~45		
7-Sep	19:00	M	795	no	70288	6~46		
7-Sep	19:00	F	720	no	70288	7~47		
7-Sep	19:45	F	740	no	70288	8~48		
8-Sep	9:00	M						
8-Sep	9:00	M						
8-Sep	9:00	M						
8-Sep	9:00	M						
8-Sep	9:00	M						
8-Sep	9:00	M						
8-Sep	9:00	F						
8-Sep	9:00	F						
8-Sep	9:00	F						
8-Sep	9:00	F						
8-Sep	9:00	F						
8-Sep	9:00	F						
8-Sep	9:00	F						
8-Sep	9:00	F						
8-Sep	9:00	F						
8-Sep	9:30	F		yes				
8-Sep	9:30	M	810	no	70288	9~49		

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
8-Sep	9:30	F	720	no	70288	10~50		
8-Sep	9:30	M	760	no	67401	1~41	clean	
8-Sep	9:30	M	870	no	67401	2~42		
8-Sep	9:30	F	690	no	67401	3~43		
8-Sep	9:30	M	720	no	67401	4~44		
8-Sep	9:30	M	815	no	67401	5~45		
8-Sep	9:30	F	720	no	67401	6~46		
8-Sep	9:30	F	685	yes	67401	7~47		
8-Sep	14:45	F	700	no	67401	8~48		
8-Sep	14:45	M	750	no	67401	9~49		
8-Sep	14:45	F	810	no	67401	10~50	deck flopper	
8-Sep	14:45	M	715	no	67402	1~41		
8-Sep	14:45	F	670	no	67402	2~42		
8-Sep	14:45	M	780	no	67402	3~43		
8-Sep	14:45	M	790	no	67402	4~44		
8-Sep	14:45	M	670	yes	67402	5~45		
8-Sep	14:45	M	765	no	67402	6~46		
8-Sep	14:45	F	740	no	67402	7~47	very marked up	
8-Sep	14:45	M	740	no	67402	8~48		
8-Sep	17:15	M						
8-Sep	17:15	F						
8-Sep	17:15	F						
8-Sep	17:15	F						
8-Sep	17:15	F						
8-Sep	17:15	F						
8-Sep	17:45	M						
8-Sep	17:45	M						
8-Sep	17:45	M		yes				
8-Sep	17:45	F						
8-Sep	17:45	F						
8-Sep	17:45	F						
8-Sep	17:45	F						
8-Sep	17:45	F						
8-Sep	17:45	F						
8-Sep	18:30	M						
8-Sep	18:30	M						
8-Sep	19:00	M						
8-Sep	19:00	M						
8-Sep	19:00	M						
8-Sep	19:00	M						
8-Sep	19:00	F						
8-Sep	19:00	F						
8-Sep	19:00	F						
8-Sep	19:00	F						
8-Sep	19:00	F						
8-Sep	19:00	F						
8-Sep	19:00	F	820	no	67402	9~49		
8-Sep	19:00	M	940	no	67402	10~50		

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
20-Sep	16:45	M						
20-Sep	16:45	M						
20-Sep	16:45	M		yes				
20-Sep	16:45	M		yes				
20-Sep	16:45	F	770				yes	yellow 35588; skin torn from mouth
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F						
20-Sep	16:45	F		yes				
20-Sep	16:45	F						
20-Sep	18:45	M						
21-Sep	8:45	M						
21-Sep	8:45	F		yes				
21-Sep	18:30	F	780	no	67403	7~47		
21-Sep	18:30	F	685	no	67403	8~48		
21-Sep	18:30	M	720	no	67403	9~49		
21-Sep	18:30	F	725	yes			yes	yellow 37017; Very severe Gn marks
22-Sep	9:00	M						
22-Sep	15:00	M	815	no	67403	10~50		
22-Sep	18:45	F	730	no	67404	1~41		
22-Sep	18:45	F	750	no	67404	2~42		
22-Sep	18:45	F	670	no	67404	3~43		
22-Sep	18:45	F	830	yes			yes	yellow 35201
23-Sep	8:20	M						
23-Sep	18:45	F						
24-Sep	9:30	F						
24-Sep	17:30	M	800	no	67404	4~44	clean	
24-Sep	18:45	F						
25-Sep	9:20	F						
25-Sep	16:15	M	800	no	67404	5~45		
26-Sep	17:45	M						
26-Sep	17:45	M						
26-Sep	17:45	M						
26-Sep	17:45	M						
26-Sep	17:45	M		yes				
26-Sep	17:45	M						
26-Sep	17:45	M						
26-Sep	17:45	M						
26-Sep	17:45	M						

Appendix Table 2. (continued)

Date	Time	Sex	NF Lgth (mm)	Gillnet Marks	Scale Book		Tag	Comments
					Number	Position		
28-Sep	9:00	M						scratches on head
28-Sep	9:00	M						
28-Sep	9:00	M						
28-Sep	9:00	F						
28-Sep	9:00	F						
28-Sep	17:00	F	700	no	67405	9~49		
28-Sep	17:00	F	665	no	67405	10~50		
28-Sep	17:30	F	720	no	67406	1~41		
28-Sep	17:30	F	720	yes	67406	2~42		
28-Sep	17:30	M	590	no	67406	3~43		
28-Sep	17:30	F	810	no			yes yellow 35306	
28-Sep	17:45	F	890	no	67406	4~44		
28-Sep	17:45	M						
28-Sep	17:45	M						
28-Sep	17:45	M						
28-Sep	17:45	F						
28-Sep	17:45	F						
28-Sep	17:45	F						
28-Sep	17:45	F						
28-Sep	17:45	F						
28-Sep	17:45	F						
28-Sep	17:45	F						
29-Sep	17:00	F	720	no	67405	5~45		
29-Sep	17:00	M						
29-Sep	17:00	F						
29-Sep	17:00	F						
29-Sep	18:00	M						
29-Sep	18:15	M						
29-Sep	18:45	M						
30-Sep	9:15	F						
30-Sep	9:15	F						
30-Sep	17:00	M						
30-Sep	17:00	M						
30-Sep	17:00	M						
30-Sep	17:00	F						
30-Sep	17:00	F						
30-Sep	17:00	F						
30-Sep	17:00	F						
30-Sep	17:00	F						
30-Sep	19:00	M						
1-Oct	11:00	F						
1-Oct	11:00	F						
1-Oct	11:00	F						scratches on nose

Appendix Table 3. Steelhead handling mortalities, 2003

Date	Sex	Length (mm)		Weight (kg)	Picture #	Comments
		NF	POH			
29-Aug	F	785	710	5.0	R1: 1 - 3	probably sampled Aug 28
31-Aug	F	670		3.0	R1: 4 - 5	clean; probably stressed from trap
07-Sep	F	750	620	4.3	R1: 21 - 22	stressed; found dead against panels between trap and bank.

Appendix Table 4. Daily and cumulative totals of chinook, sockeye and coho salmon migrating past the Sustut River fence, 2003.

Date	Chinook		Sockeye		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
31-Jul	61	61	0	0	0	0
1-Aug	248	309	0	0	0	0
2-Aug	158	467	0	0	0	0
3-Aug	70	537	8	8	0	0
4-Aug	87	624	48	56	0	0
5-Aug	86	710	67	123	0	0
6-Aug	73	783	169	292	0	0
7-Aug	60	843	266	558	0	0
8-Aug	27	870	178	736	0	0
9-Aug	86	956	154	890	0	0
10-Aug	32	988	135	1025	0	0
11-Aug	16	1004	56	1081	0	0
12-Aug	28	1032	208	1289	1	1
13-Aug	14	1046	337	1626	0	1
14-Aug	14	1060	334	1960	2	3
15-Aug	6	1066	49	2009	0	3
16-Aug	10	1076	468	2477	3	6
17-Aug	1	1077	420	2897	2	8
18-Aug	3	1080	263	3160	1	9
19-Aug	10	1090	136	3296	3	12
20-Aug	5	1095	131	3427	3	15
21-Aug	5	1100	117	3544	1	16
22-Aug	1	1101	307	3851	1	17
23-Aug	0	1101	32	3883	0	17
24-Aug	2	1103	164	4047	1	18
25-Aug	0	1103	92	4139	1	19
26-Aug	0	1103	28	4167	0	19
27-Aug	1	1104	61	4228	2	21
28-Aug	0	1104	79	4307	2	23
29-Aug	0	1104	26	4333	1	24
30-Aug	0	1104	41	4374	0	24

Appendix Table 4. (continued)

Date	Chinook		Sockeye		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
31-Aug	0	1104	170	4544	5	29
1-Sep	0	1104	31	4575	2	31
2-Sep	1	1105	22	4597	6	37
3-Sep	0	1105	150	4747	4	41
4-Sep	0	1105	8	4755	1	42
5-Sep	0	1105	71	4826	2	44
6-Sep	0	1105	69	4895	10	54
7-Sep	0	1105	17	4912	7	61
8-Sep	1	1106	42	4954	8	69
9-Sep	0	1106	13	4967	9	78
10-Sep	0	1106	3	4970	1	79
11-Sep	0	1106	7	4977	8	87
12-Sep	0	1106	3	4980	4	91
13-Sep	0	1106	2	4982	1	92
14-Sep	0	1106	3	4985	1	93
15-Sep	0	1106	0	4985	1	94
16-Sep	0	1106	0	4985	0	94
17-Sep	0	1106	0	4985	0	94
18-Sep	0	1106	0	4985	0	94
19-Sep	0	1106	4	4989	3	97
20-Sep	0	1106	0	4989	1	98
21-Sep	0	1106	1	4990	0	98
22-Sep	0	1106	0	4990	4	102
23-Sep	0	1106	0	4990	1	103
24-Sep	0	1106	0	4990	1	104
25-Sep	0	1106	0	4990	1	105
26-Sep	0	1106	1	4991	4	109
27-Sep	0	1106	1	4992	3	112
28-Sep	0	1106	0	4992	4	116
29-Sep	0	1106	0	4992	1	117
30-Sep	0	1106	0	4992	2	119
1-Oct	0	1106	0	4992	0	119

Appendix Table 5. Sampling data from all chinook salmon carcasses recovered from the Sustut River fence, 2003.

Date	Time	Sex	Length (mm)		Operc. Punch	Comments
			NF	P.O.H		
31-Jul	17:45	F	1040	835	no	100% spawned
3-Aug	20:00	M	1130	860	yes	Decaying when punched, a.m. floated back on fence, p.m.
5-Aug	20:00	M	920	730	no	
5-Aug	20:00	M	1100	820	no	
5-Aug	20:00	M	870	680	no	
5-Aug	20:00	M	830	650	no	
6-Aug	20:00	M	880	690	no	
6-Aug	20:00	M	890	700	no	
6-Aug	20:00	M	960	730	yes	
6-Aug	20:00	M	1000	760	no	
7-Aug	20:30	M	1030	800	no	
7-Aug	20:30	M	870	690	no	unspawned
7-Aug	20:30	M	1000	790	no	spawned
7-Aug	20:30	M	1050	820	no	partial
7-Aug	20:30	M	970	760	no	unspawned
8-Aug	8:30	M	900	730	no	
8-Aug	19:45	M	1120	870	no	
8-Aug	19:45	M	900	700	no	
8-Aug	19:45	M	980	780	no	
9-Aug	8:30	F	920	740	no	
9-Aug	21:15	F	860	720	no	
9-Aug	21:15	M	960	730	no	
9-Aug	21:15	M	910	710	no	
10-Aug	20:10	F	950	760	no	unspawned
10-Aug	20:10	M	770	610	no	
10-Aug	20:10	M	980	770	no	
10-Aug	20:10	M	1020	800	no	
10-Aug	20:10	M	950	720	no	
10-Aug	20:10	M	1090	850	no	
11-Aug	19:30	M	1060	820	no	
11-Aug	19:30	M	1060	790	no	
11-Aug	19:30	M	860	680	no	
11-Aug	19:30	M	1040	800	no	
11-Aug	19:30	M	730	580	no	
11-Aug	19:30	M	1040	790	no	
11-Aug	19:30	M	820	650	no	
11-Aug	19:30	M	890	690	no	
11-Aug	19:30	M	1020	810	no	
11-Aug	19:30	M	810	640	no	
11-Aug	19:30	M	960	740	no	
11-Aug	19:30	M	930	720	no	
11-Aug	19:30	M	1080	830	no	
12-Aug	9:00	M	990	740	no	
12-Aug	9:00	M	1080	810	no	
12-Aug	9:00	M	950	740	no	
12-Aug	9:00	M	940	730	no	

Appendix Table 5. (continued)

Date	Time	Sex	Length (mm)		Operc. Punch	Comments
			NF	P.O.H		
12-Aug	9:00	M	840	670	no	
12-Aug	9:00	M	930	740	no	
12-Aug	20:30	M	820	650	no	
12-Aug	20:30	F	820	670	yes	appeared to have spawned
12-Aug	20:30	M	850	670	no	
12-Aug	20:30	M	840	660	no	
12-Aug	20:30	F	830	670	yes	unspawned
12-Aug	20:30	M	1090	850	no	
12-Aug	20:30	M	920	710	no	
12-Aug	20:30	F	890	720	no	appeared to have spawned
12-Aug	20:30	M	900	715	no	
12-Aug	20:30	M	940	750	no	
12-Aug	20:30	M	1150	880	no	
12-Aug	20:30	M	820	640	no	
13-Aug	20:30	M	950	720	no	
13-Aug	20:30	M	810	640	no	
13-Aug	20:30	M	860	670	no	
13-Aug	20:30	M	900	690	no	
13-Aug	20:30	F	800	650	yes	
13-Aug	20:30	M	980	750	no	
13-Aug	20:30	M	1000	770	no	
13-Aug	20:30	M	720	570	no	
13-Aug	20:30	M	880	690	no	
13-Aug	20:30	F	950	760	no	
14-Aug	20:15	M	980	760	no	
14-Aug	20:15	F	880	710	no	
14-Aug	20:15	M	810	650	no	
14-Aug	20:15	M	1130	870	no	
14-Aug	20:15	M	800	620	no	
14-Aug	20:15	M	920	730	no	
14-Aug	20:15	M	1120	860	no	
14-Aug	20:15	M	980	760	no	
14-Aug	20:15	F	970	790	no	
15-Aug	20:00	F	920	750	no	
15-Aug	20:00	F	870	720	no	
15-Aug	20:00	F	840	690	no	
15-Aug	20:00	F	940	770	no	
15-Aug	20:00	F	870	710	no	
15-Aug	20:00	M	1120	880	no	
15-Aug	20:00	M	1110	850	no	
15-Aug	20:00	F	910	740	no	
15-Aug	20:00	M	990	780	no	
15-Aug	20:00	M	1020	790	no	
15-Aug	20:00	M	980	770	no	
15-Aug	20:00	M	890	700	no	
15-Aug	20:00	M	970	770	no	
16-Aug	20:30	M	1000	790	no	
16-Aug	20:30	M	1120	880	no	
16-Aug	20:30	M	890	700	no	

Appendix Table 5. (continued)

Date	Time	Sex	Length (mm)		Operc. Punch	Comments
			NF	P.O.H		
16-Aug	20:30	M	1010	780	no	
16-Aug	20:30	M	940	740	no	
16-Aug	20:30	M	1020	790	no	
16-Aug	20:30	M	830	640	no	
16-Aug	20:30	M	950	740	no	
16-Aug	20:30	M	1000	780	no	
16-Aug	20:30	M	870	690	no	
16-Aug	20:30	M	880	680	no	
16-Aug	20:30	M	710	580	no	
16-Aug	20:30	M	650	510	no	
16-Aug	20:30	M	710	560	no	
16-Aug	20:30	M	1020	800	no	
16-Aug	20:30	M	820	640	no	
16-Aug	20:30	M	880	690	no	
16-Aug	20:30	M	1070	830	no	
16-Aug	20:30	M	890	690	no	
16-Aug	20:30	M	1040	790	no	
16-Aug	20:30	F	850	690	no	
17-Aug	11:00	F	900	720	no	
17-Aug	11:00	M	1020	790	no	
17-Aug	11:00	M	1000	770	no	
17-Aug	11:00	M	930	720	no	
17-Aug	11:00	M	660	530	yes	
17-Aug	11:00	M	960	740	no	
17-Aug	11:00	M	1000	770	no	
17-Aug	11:00	M	870	680	no	
17-Aug	20:30	M	950	760	no	
17-Aug	20:30	M	930	720	no	
17-Aug	20:30	M	840	670	no	
17-Aug	20:30	M	750	590	no	
18-Aug	19:45	M	640	490	no	
18-Aug	19:45	M	930	710	no	
18-Aug	19:45	M	800	610	no	
18-Aug	19:45	M	720	560	no	
18-Aug	19:45	M	850	660	no	
18-Aug	19:45	M	960	750	no	
18-Aug	19:45	M	960	750	no	
18-Aug	19:45	M	930	720	no	
18-Aug	19:45	M	970	740	no	
18-Aug	19:45	F	800	660	no	
18-Aug	19:45	M	900	690	no	
18-Aug	19:45	M	880	690	no	
18-Aug	19:45	M	1070	830	no	
18-Aug	19:45	M	955	720	no	
18-Aug	19:45	M	990	760	no	
18-Aug	19:45	M	810	645	no	
18-Aug	19:45	M	1020	790	no	
18-Aug	19:45	M	960	740	no	
18-Aug	19:45	F	840	690	no	

Appendix Table 5. (continued)

Date	Time	Sex	Length (mm)		Operc. Punch	Comments
			NF	P.O.H		
19-Aug	19:45	M	930	730	no	
19-Aug	19:45	M	670	530	no	
19-Aug	19:45	M	910	720	no	
19-Aug	19:45	M	810	640	no	
19-Aug	19:45	M	850	680	no	
19-Aug	19:45	M	930	730	no	
19-Aug	19:45	M	1030	780	no	
19-Aug	19:45	M	920	730	no	
19-Aug	19:45	M	900	700	no	
19-Aug	19:45	M	990	770	no	
19-Aug	19:45	M	830	660	no	
19-Aug	19:45	M	810	645	no	
19-Aug	19:45	M	720	500	no	
19-Aug	19:45	M	830	640	no	
19-Aug	19:45	M	890	730	no	
19-Aug	19:45	M	1020	780	no	
19-Aug	19:45	M	770	600	no	
19-Aug	19:45	F	830	680	no	
19-Aug	19:45	F	880	710	no	bag of mush
19-Aug	19:45	F	950	770	no	very rotten
20-Aug	20:00	F	810	670	no	
20-Aug	20:00	M	970	760	no	
20-Aug	20:00	M	880	680	no	
20-Aug	20:00	M	1050	810	no	
20-Aug	20:00	M	890	700	no	
20-Aug	20:00	M	690	550	no	
20-Aug	20:00	M	880	690	no	
20-Aug	20:00	M	850	680	no	
20-Aug	20:00	M	930	720	no	
20-Aug	20:00	M	970	770	no	
20-Aug	20:00	M	860	660	no	
20-Aug	20:00	M	940	750	no	
21-Aug	19:45	M	860	660	no	
21-Aug	19:45	M	910	710	no	
21-Aug	19:45	M	740	580	no	
21-Aug	19:45	M	940	720	no	
21-Aug	19:45	F	830	670	no	
21-Aug	19:45	M	840	640	no	
21-Aug	19:45	M	980	800	no	
21-Aug	19:45	M	910	700	no	
21-Aug	19:45	M	830	640	no	
22-Aug	20:00	M	700	530	no	
22-Aug	20:00	M	710	550	no	
22-Aug	20:00	M	840	660	no	
22-Aug	20:00	M	870	660	no	
22-Aug	20:00	M	1030	800	no	
22-Aug	20:00	M	870	700	no	
22-Aug	20:00	M	860	660	no	
22-Aug	20:00	M	910	710	no	

Appendix Table 5. (continued)

Date	Time	Sex	Length (mm)		Operc. Punch	Comments
			NF	P.O.H		
22-Aug	20:00	M	960	730	no	
22-Aug	20:00	F	830	680	no	
22-Aug	20:00	F	790	640	no	
22-Aug	20:00	M	990	760	no	
22-Aug	20:00	F	970	760	no	
22-Aug	20:00	M	1040	780	no	
23-Aug	20:00	M	860	670	no	
23-Aug	20:00	M	940	720	no	
23-Aug	20:00	M	930	730	no	
23-Aug	20:00	M	1030	820	no	
24-Aug	20:00	F	910	740	no	
24-Aug	20:00	F	850	710	no	
24-Aug	20:00	M	1030	790	no	
24-Aug	20:00	M	710	590	no	
24-Aug	20:00	M	840	650	no	
24-Aug	20:00	F	880	710	no	
25-Aug	20:00	M	980	780	no	
25-Aug	20:00	M	920	730	no	
25-Aug	20:00	M	640	510	no	
25-Aug	20:00	M	850	680	no	
25-Aug	20:00	M	880	700	no	
26-Aug	20:00	M	790	620	no	
26-Aug	20:00	M	640	500	no	
26-Aug	20:00	M	930	720	no	
26-Aug	20:00	M	870	670	no	
27-Aug	20:00	M	740	570	no	
27-Aug	20:00	M	880	680	no	
27-Aug	20:00	M	710	570	no	
27-Aug	20:00	M	910	700	no	
28-Aug	20:15	M	760	610	no	
28-Aug	20:15	M	730	570	no	
28-Aug	20:15	M	860	670	no	
28-Aug	20:15	M	950	740	no	
28-Aug	20:15	F	840	670	no	
28-Aug	20:15	F	840	690	no	
29-Aug	20:00	M	870	680	no	
30-Aug	20:00	M	950	750	no	
30-Aug	20:00	M	940	730	no	
30-Aug	20:00	M	950	730	no	
30-Aug	20:00	M	680	530	no	
30-Aug	20:00	M	970	750	no	
31-Aug	20:30	M	950	750	no	
1-Sep	19:45	F	830	660	no	
4-Sep	19:30					too rotten to sample
6-Sep	9:00	M	1050	790	no	died last night
6-Sep	9:00	F				empty skin,too rotten to sample
7-Sep	11:30	M	1060	800	no	extremely rotten
7-Sep	11:30	F	890	720	no	
7-Sep	11:30	F				too rotten

Appendix Table 5. (continued)

Date	Time	Sex	Length (mm)		Operc. Punch	Comments
			NF	P.O.H		
7-Sep	15:15	F	940	765	no	
7-Sep	20:15	M	960	780	no	extremely rotten
7-Sep	20:15	F			no	head and skin
7-Sep	20:15	F?				head and skeleton
8-Sep	11:00	F				skeleton with head
8-Sep	11:00	F				"
8-Sep	11:00	F				"
8-Sep	11:00	F				"
8-Sep	11:00	M				"
8-Sep	11:00	M				"
8-Sep	11:00	M				"
8-Sep	11:00	?				"
8-Sep	20:00	?				"
14-Sep	13:00	F				just head mostly
14-Sep	13:00	F				head and skeleton
14-Sep	13:00	M				"
16-Sep	10:30	F		820		head and skeleton with some skin
16-Sep	10:30	M	940	830	no	Small spots of fungus on caudal, anal fin, and tail unspawned?
19-Sep	18:45	F				guts still in skin

Appendix Table 6. Sockeye salmon sampling data from the Sustut River fence, 2003.

Date	Time	Sex	NF Length (mm)	Scale Book		Comments
				Number	Position	
03-Aug	8:30	M	730	95557	1 - 41	
04-Aug	20:00	M	690	95557	2 - 42	
04-Aug	20:00	M	670	95557	3 - 43	rotting in the fork of the tail
04-Aug	20:00	M	680	95557	4 - 44	
05-Aug	17:30	F	630	95557	5 - 45	
05-Aug	17:30	M	700	95557	6 - 46	
05-Aug	17:30	M	660	95557	7 - 47	
05-Aug	17:30	M	670	95557	8 - 48	
05-Aug	17:30	M	665	95557	9 - 49	
05-Aug	17:30	M	670	95557	10 - 50	
05-Aug	17:30	F	615	95558	1 - 41	
05-Aug	17:30	M		95558	2 - 42	
06-Aug	16:15	M	675	95558	3 - 43	
06-Aug	16:15	M	715	95558	4 - 44	
06-Aug	16:15	M	690	95558	5 - 45	
06-Aug	16:15	M	740	95558	6 - 46	
06-Aug	16:15	F	630	95558	7 - 47	
06-Aug	16:15	M	700	95558	8 - 48	
06-Aug	16:15	M	665	95558	9 - 49	

Appendix Table 6. (continued)

Date	Time	Sex	NF Length (mm)	Scale Book		Comments
				Number	Position	
06-Aug	16:15	M	670	95558	10 - 50	
06-Aug	19:30	M	685	95559	1 - 41	
06-Aug	19:30	M	680	95559	2 - 42	
06-Aug	19:30	M	700	95559	3 - 43	
06-Aug	19:30	F	635	95559	4 - 44	
06-Aug	19:30	M	710	95559	5 - 45	
06-Aug	19:30	F	585	95559	6 - 46	
06-Aug	19:30	F	590	95559	7 - 47	gillnet marks and bruises along body
06-Aug	19:30	F	660	95559	8 - 48	
06-Aug	19:30	F	650	95559	9 - 49	
06-Aug	19:30	M	650	95559	10 - 50	
07-Aug	13:30	M	670	70290	1 - 41	gillnet marks
07-Aug	13:30	F	650	70290	2 - 42	
07-Aug	13:30	F	650	70290	3 - 43	
07-Aug	13:30	F	675	70290	4 - 44	
07-Aug	13:30	M	670	70290	5 - 45	
07-Aug	13:30	F	655	70290	6 - 46	
07-Aug	13:30	F	645	70290	7 - 47	
07-Aug	13:30	F	655	70290	8 - 48	
07-Aug	13:30	M	670	70290	9 - 49	
07-Aug	13:30	M	670	70290	10 - 50	
07-Aug	18:45	M	680	70291	1 - 41	
07-Aug	20:30	F	630	70291	2 - 42	
07-Aug	20:30	M	710	70291	3 - 43	
08-Aug	8:30	F	620	70291	4 - 44	
08-Aug	14:35	M	690	70291	5 - 45	
08-Aug	14:35	F	670	70291	6 - 46	
08-Aug	14:35	M	675	70291	7 - 47	
08-Aug	14:35	F	665	70291	8 - 48	
08-Aug	14:35	M	660	70291	9 - 49	
08-Aug	14:35	M	700	70291	10 - 50	
08-Aug	14:35	M	690	70292	1 - 41	
08-Aug	14:35	F	660	70292	2 - 42	
08-Aug	14:35	M	710	70292	3 - 43	
08-Aug	14:35	M	630	70292	4 - 44	
08-Aug	14:35	F	655	70292	5 - 45	
08-Aug	14:35	F	630	70292	6 - 46	
08-Aug	15:20	M	695	70292	7 - 47	
08-Aug	15:20	F	650	70292	8 - 48	
08-Aug	18:30	M	640	70292	9 - 49	
08-Aug	18:30	M	660	70292	10 - 50	
08-Aug	18:30	F	650	70253	1 - 41	
08-Aug	18:30	F	690	70253	2 - 42	
08-Aug	18:30	F	640	70253	3 - 43	
08-Aug	18:30	M	690	70253	4 - 44	
09-Aug	12:45	F	650	70253	5 - 45	
09-Aug	12:45	M	690	70253	6 - 46	
09-Aug	12:45	F	660	70253	7 - 47	
09-Aug	12:45	M	720	70253	8 - 48	

Appendix Table 6. (continued)

Date	Time	Sex	NF Length	Scale Book		Comments
			(mm)	Number	Position	
09-Aug	12:45	F	625	70253	9 - 49	
09-Aug	12:45	F	630	70253	10 - 50	
09-Aug	12:45	M	710	70293	1 - 41	
09-Aug	12:45	F	620	70293	2 - 42	
09-Aug	12:45	M	670	70293	3 - 43	
09-Aug	12:45	M	680	70293	4 - 44	
09-Aug	12:45	F	630	70293	5 - 45	
09-Aug	12:45	M	660	70293	6 - 46	
09-Aug	12:45	F	655	70293	7 - 47	
09-Aug	12:45	M	660	70293	8 - 48	
09-Aug	12:45	F	620	70293	9 - 49	
09-Aug	21:00	M	685	70293	10 - 50	
09-Aug	21:00	F	655	70294	1 - 41	
09-Aug	21:00	F	640	70294	2 - 42	
09-Aug	21:00	M	675	70294	3 - 43	
10-Aug	19:40	F	620	70294	4 - 44	
10-Aug	19:40	F	660	70294	5 - 45	
10-Aug	19:40	F	645	70294	6 - 46	
10-Aug	19:40	F	650	70294	7 - 47	bruised on one side
10-Aug	19:40	F	625	70294	8 - 48	both pelvic fins badly damaged
10-Aug	19:40	F	640	70294	9 - 49	
10-Aug	19:40	M	690	70294	10 - 50	gillnet marks, chunk of gill missing
10-Aug	19:40	F	580	70295	1 - 41	
10-Aug	19:40	F	640	70295	2 - 42	
10-Aug	19:40	M	660	70295	3 - 43	multiple gillnet marks
10-Aug	19:40	M	640	70295	4 - 44	gouge by anal fin and behind dorsal fin
10-Aug	19:40	F	640	70295	5 - 45	
11-Aug	19:30	F	570	70295	6 - 46	gillnet marks
11-Aug	19:30	M	645	70295	7 - 47	maxillary ripped off and hanging; bleeding
11-Aug	19:30	M	665	70295	8 - 48	
11-Aug	19:30	F	660	70295	9 - 49	
12-Aug	18:30	F	635	70295	10 - 50	gillnet marks along body up to dorsal fin
12-Aug	20:00	F	560	70296	1 - 41	
12-Aug	20:00	M	670	70296	2 - 42	gillnet marks
12-Aug	20:00	F	610	70296	3 - 43	
12-Aug	20:00	M	710	70296	4 - 44	gillnet marks
12-Aug	20:00	M	660	70296	5 - 45	looks squeezed in middle
12-Aug	20:00	F	660	70296	6 - 46	
12-Aug	20:00	F	640	70296	7 - 47	
12-Aug	20:00	M	660	70296	8 - 48	
12-Aug	20:00	F	650	70296	9 - 49	pieces missing from nose and maxillary
12-Aug	20:00	F	625	70296	10 - 50	
12-Aug	20:00	F	650	70297	1 - 41	
12-Aug	20:00	M	695	70297	2 - 42	
12-Aug	20:00	F	640	70297	3 - 43	
12-Aug	20:00	F	670	70297	4 - 44	
12-Aug	20:00	M	710	70297	5 - 45	
12-Aug	20:00	M	700	70297	6 - 46	chunk out of gill, anal fin mostly gone
12-Aug	20:00	F	650	70297	7 - 47	

Appendix Table 6. (continued)

Date	Time	Sex	NF Length	Scale Book		Comments
			(mm)	Number	Position	
12-Aug	20:00	F	640	70297	8 - 48	
12-Aug	20:00	M	690	70297	9 - 49	
12-Aug	20:00	M	640	70297	10 - 50	
12-Aug	20:00	M	670	70298	1 - 41	
13-Aug	19:15	M	650	70298	2 - 42	
13-Aug	19:15	F	620	70298	3 - 43	
13-Aug	19:15	F	640	70298	4 - 44	
13-Aug	19:15	F	620	70298	5 - 45	
13-Aug	19:15	M	670	70298	6 - 46	
13-Aug	19:15	M	650	70298	7 - 47	
13-Aug	19:15	M	740	70298	8 - 48	
13-Aug	19:15	M	690	70298	9 - 49	
13-Aug	19:15	M	680	70298	10 - 50	
13-Aug	19:15	F	640	70299	1 - 41	
13-Aug	19:15	M	730	70299	2 - 42	
13-Aug	19:15	F	630	70299	3 - 43	
13-Aug	19:15	M	610	70299	4 - 44	
13-Aug	19:15	M	670	70299	5 - 45	
13-Aug	19:15	M	660	70299	6 - 46	
13-Aug	19:15	M	690	70299	7 - 47	
13-Aug	19:15	M	695	70299	8 - 48	
13-Aug	19:15	F	565	70299	9 - 49	
13-Aug	19:15	F	565	70299	10 - 50	
13-Aug	19:15	M	690	70300	1 - 41	
13-Aug	19:15	M	650	70300	2 - 42	
13-Aug	19:15	F	635	70300	3 - 43	
13-Aug	19:15	M	700	70300	4 - 44	
13-Aug	19:15	M	690	70300	5 - 45	
13-Aug	19:15	M	680	70300	6 - 46	
13-Aug	19:15	M	760	70300	7 - 47	
13-Aug	19:15	M	685	70300	8 - 48	
13-Aug	19:15	F	660	70300	9 - 49	
13-Aug	19:15	M	700	70300	10 - 50	
13-Aug	19:15	M	685	70268	1 - 41	
13-Aug	19:15	F	630	70268	2 - 42	
13-Aug	19:15	F	650	70268	3 - 43	
13-Aug	19:15	M	695	70268	4 - 44	
13-Aug	19:15	F	650	70268	5 - 45	
13-Aug	19:15	F	690	70268	6 - 46	
13-Aug	19:15	F	625	70268	7 - 47	
13-Aug	19:15	M	655	70268	8 - 48	
13-Aug	19:15	M	690	70268	9 - 49	
13-Aug	19:15	F	630	70268	10 - 50	
13-Aug	19:15	M	705	70267	1 - 41	
13-Aug	19:15	M	590	70267	2 - 42	
14-Aug	18:30	M	680	70267	3 - 43	
14-Aug	20:15	M	670	70267	4 - 44	
14-Aug	20:15	M	630	70267	5 - 45	
14-Aug	20:15	F	625	70267	6 - 46	

Appendix Table 6. (continued)

Date	Time	Sex	NF Length (mm)	Scale Book		Comments
				Number	Position	
14-Aug	20:15	M	660	70267	7 - 47	gillnet marks
14-Aug	20:15	F	630	70267	8 - 48	dorsal fin gone; fungus
14-Aug	20:15	F	650	70267	9 - 49	
14-Aug	20:15	F	630	70267	10 - 50	
14-Aug	20:15	F	590	70270	1 - 41	
15-Aug	19:30	M	695	70270	2 - 42	
15-Aug	19:30	M	650	70270	3 - 43	fungus in front of dorsal fin; deep side scars
15-Aug	19:30	M	685	70270	4 - 44	
15-Aug	19:30	M	625	70270	5 - 45	
15-Aug	19:30	M	650	70270	6 - 46	
15-Aug	19:30	M	745	70270	7 - 47	
15-Aug	19:30	M	620	70270	8 - 48	
15-Aug	19:30	M	670	70270	9 - 49	
15-Aug	19:30	M	655	70270	10 - 50	
15-Aug	19:30	M	625	70271	1 - 41	
15-Aug	19:30	M	675	70271	2 - 42	
15-Aug	19:30	M	570	70271	3 - 43	
15-Aug	19:30	M	700	70271	4 - 44	
15-Aug	19:30	M	650	70271	5 - 45	
15-Aug	19:30	M	660	70271	6 - 46	
15-Aug	19:30	M	645	70271	7 - 47	
15-Aug	19:30	F	660	70271	8 - 48	
15-Aug	19:30	M	695	70271	9 - 49	
15-Aug	19:30	M	660	70271	10 - 50	
15-Aug	19:30	M	680	70272	1 - 41	
15-Aug	19:30	F	610	70272	2 - 42	
15-Aug	19:30	M	655	70272	3 - 43	
15-Aug	19:30	F	640	70272	4 - 44	gillnet marks
15-Aug	19:30	F	660	70272	5 - 45	
15-Aug	19:30	F	640	70272	6 - 46	looks squeezed toward the back end
15-Aug	19:30	F	635	70272	7 - 47	
15-Aug	19:30	F	660	70272	8 - 48	gillnet marks
15-Aug	19:30	M	690	70272	9 - 49	
15-Aug	19:30	M	665	70272	10 - 50	
15-Aug	19:30	M	700	70273	1 - 41	
15-Aug	19:30	M	715	70273	2 - 42	
15-Aug	19:30	F	605	70273	3 - 43	
16-Aug	9:00	F	670	70273	4 - 44	
16-Aug	17:00	F	610	70273	5 - 45	
16-Aug	17:00	M	690	70273	6 - 46	
16-Aug	17:00	F	650	70273	7 - 47	
16-Aug	17:00	F	650	70273	8 - 48	left side of face missing; fungus
16-Aug	17:00	F	635	70273	9 - 49	gillnet marks
16-Aug	17:00	M	680	70273	10 - 50	
16-Aug	17:00	M	695	70274	1 - 41	
16-Aug	17:00	M	625	70274	2 - 42	
16-Aug	17:00	F	540	70274	3 - 43	
16-Aug	17:00	M	695	70274	4 - 44	
16-Aug	20:00	F	655	70274	5 - 45	

Appendix Table 6. (continued)

Date	Time	Sex	NF Length	Scale Book		Comments
			(mm)	Number	Position	
16-Aug	20:00	M	680	70274	6 - 46	
16-Aug	20:00	F	620	70274	7 - 47	
16-Aug	20:00	F	680	70274	8 - 48	gillnet marks
16-Aug	20:00	M	665	70274	9 - 49	
16-Aug	20:00	F	655	70274	10 - 50	
16-Aug	20:00	F	660	70275	1 - 41	
16-Aug	20:00	M	690	70275	2 - 42	
16-Aug	20:00	M	675	70275	3 - 43	
16-Aug	20:00	F	615	70275	4 - 44	
16-Aug	20:00	M	685	70275	5 - 45	
16-Aug	20:00	F	645	70275	6 - 46	
16-Aug	20:00	M	690	70275	7 - 47	
16-Aug	20:00	F	645	70275	8 - 48	
16-Aug	20:00	F	660	70275	9 - 49	
16-Aug	20:00	F	630	70275	10 - 50	
17-Aug	9:00	M	650	70276	1 - 41	
17-Aug	9:00	F	635	70276	2 - 42	
17-Aug	9:00	F	635	70276	3 - 43	
17-Aug	9:00	M	700	70276	4 - 44	
17-Aug	9:00	M	660	70276	5 - 45	
17-Aug	9:00	M	650	70276	6 - 46	
17-Aug	9:00	F	630	70276	7 - 47	
17-Aug	9:00	F	640	70276	8 - 48	
17-Aug	9:00	F	660	70276	9 - 49	
17-Aug	9:00	F	620	70276	10 - 50	
17-Aug	9:00	M	720	70277	1 - 41	
17-Aug	9:00	F	625	70277	2 - 42	
17-Aug	9:00	F	640	70277	3 - 43	
17-Aug	9:00	M	700	70277	4 - 44	
17-Aug	9:00	M	635	70277	5 - 45	
17-Aug	9:00	M	665	70277	6 - 46	
17-Aug	9:00	M	655	70277	7 - 47	
17-Aug	9:00	F	520	70277	8 - 48	
17-Aug	9:00	F	565	70277	9 - 49	
17-Aug	9:00	F	610	70277	10 - 50	
17-Aug	9:00	F	630	70278	1 - 41	
17-Aug	9:00	F	640	70278	2 - 42	
17-Aug	9:00	F	660	70278	3 - 43	
17-Aug	9:00	F	650	70278	4 - 44	
17-Aug	9:00	F	575	70278	5 - 45	
17-Aug	9:00	M	695	70278	6 - 46	gillnet marks
17-Aug	9:00	M	680	70278	7 - 47	gillnet marks
17-Aug	9:00	F	640	70278	8 - 48	
17-Aug	9:00	M	660	70278	9 - 49	
17-Aug	9:00	F	650	70278	10 - 50	
17-Aug	17:00	M	650	70279	1 - 41	
17-Aug	17:00	M	710	70279	2 - 42	
17-Aug	17:00	M	690	70279	3 - 43	
17-Aug	17:00	M	660	70279	4 - 44	

Appendix Table 6. (continued)

Date	Time	Sex	NF Length	Scale Book		Comments
			(mm)	Number	Position	
17-Aug	17:00	M	700	70279	5 - 45	punctured pelvic fin
17-Aug	17:00	F	630	70279	6 - 46	
17-Aug	17:00	F	620	70279	7 - 47	
17-Aug	17:00	F	650	70279	8 - 48	
17-Aug	17:00	M	705	70279	9 - 49	
17-Aug	17:00	F	620	70279	10 - 50	bad tail
17-Aug	17:00	F	640	70280	1 - 41	
17-Aug	17:00	F	665	70280	2 - 42	damaged on side
17-Aug	17:00	F	630	70280	3 - 43	
17-Aug	17:00	F	650	70280	4 - 44	scratches on side
17-Aug	17:00	F	655	70280	5 - 45	spot on head
17-Aug	17:00	F	650	70280	6 - 46	
17-Aug	17:00	F	620	70280	7 - 47	scars on side
17-Aug	17:00	M	625	70280	8 - 48	
17-Aug	17:00	F	630	70280	9 - 49	
17-Aug	17:00	M	635	70280	10 - 50	
17-Aug	17:00	M	670	70281	1 - 41	
17-Aug	17:00	F	670	70281	2 - 42	gillnet marks
17-Aug	17:00	M	695	70281	3 - 43	
17-Aug	17:00	M	660	70281	4 - 44	
17-Aug	17:00	M	675	70281	5 - 45	
17-Aug	17:00	F	640	70281	6 - 46	
17-Aug	17:00	F	655	70281	7 - 47	
17-Aug	17:00	F	650	70281	8 - 48	
17-Aug	17:00	F	630	70281	9 - 49	
17-Aug	17:00	M	660	70281	10 - 50	
18-Aug	14:30	M	690	70282	1 - 41	
18-Aug	14:30	F	540	70282	2 - 42	lots of gillnet marks on front of body
18-Aug	14:30	F	635	70282	3 - 43	
18-Aug	14:30	F	640	70282	4 - 44	
18-Aug	14:30	M	635	70282	5 - 45	gillnet marks
18-Aug	14:30	F	640	70282	6 - 46	
18-Aug	14:30	M	720	70282	7 - 47	
18-Aug	14:30	F	595	70282	8 - 48	

Appendix Table 7. Sampling data for all sockeye salmon carcasses recovered from the Sustut River fence, 2003.

Date	Time	Sex	Length (mm)		Comments
			NF	P.O.H	
13-Aug	20:30	M	670	520	died on fence
21-Aug	19:45	M	700	555	unspawned, in good shape, cause of death unknown
22-Aug	20:00	F	570	460	unspawned, in good shape, cause of death unknown
26-Aug	20:00	F	640	520	in good shape, cause of death unknown
27-Aug	19:30	M	660	520	
28-Aug	20:15	F	660	520	unspawned, in good shape, cause of death unknown
28-Aug	20:15	M	690	540	fungus around tail and on nose
29-Aug	9:15	F	650		unspawned, cause of death unknown
29-Aug	9:15	M	650		spawned
29-Aug	9:15	M	670		spawned
4-Sep	19:30	M			partially eaten by birds, looked fresh
5-Sep	20:00				head eaten by birds
8-Sep	11:00	M	720	555	lots of fungus
10-Sep	20:00	M		595	end of nose gone
12-Sep	19:45	F	640	520	fungus all over head, unspawned
13-Sep	10:30	F	690	560	fungus on nose, unspawned
14-Sep	13:00	M	655	515	fungus on nose and adipose, unspawned
14-Sep	13:00	M	670	520	unspawned
14-Sep	13:00	F	630	520	extensive fungus, unspawned
20-Sep	9:15	F	620	500	loose, sunk in belly
21-Sep	8:45	M	680	550	
21-Sep	13:30	M			spot of fungus on nose
22-Sep	9:15	F	530	440	fungus on head
24-Sep	18:50	M	670	530	nose covered in fungus
25-Sep	9:30	F	580	475	fungus by dorsal, adipose and caudal fin
26-Sep	19:00	M	690	550	fungus all over
27-Sep	9:30	F	640	520	fungus
27-Sep	19:00	M	710	540	in good shape
27-Sep	19:00	M			forgot to measure; NF approx. 650 mm
30-Sep	9:30	M	630	510	fungus on nose, not completely dead

Appendix Table 8. Sampling data from all coho salmon migrating past the Sustut River fence, 2003.

Date	Time	Sex	NF Lgth (mm)	Scale Book		DNA	Comments
				Number	Position		
12-Aug	14:45	M	450	70269	1 - 41	yes	marks on side
14-Aug	14:45	M	665	70269	2 - 42	yes	calm in the sample box
14-Aug	14:45	M	450	70269	3 - 43	yes	calm in the sample box
16-Aug	9:00	F	665	70269	4 - 44	yes	gillnet marks
16-Aug	9:00	M	415	70269	5 - 45	yes	
16-Aug	19:00	M	440	70269	6 - 46	yes	slightly scratched
17-Aug	16:00	M	585	70269	7 - 47	yes	
17-Aug	16:00	M					escaped before sampling
18-Aug	19:00	M	520	70269	8 - 48	yes	
19-Aug	15:30	F	440	70269	9 - 49	yes	clean
19-Aug	15:30	M	460	70269	10 - 50	yes	clean
19-Aug	17:45	M	570	70283	1 - 41	yes	clean
20-Aug	15:30	M	710	70283	2 - 42	yes	
20-Aug	16:30	M	550	70283	3 - 43	yes	
20-Aug	18:45	M	580	70283	4 - 44	yes	
21-Aug	16:15	?					escaped before sampling; id uncertain
22-Aug	19:30	M	480	70283	5 - 45	yes	
24-Aug	15:45	M	480	70283	6 - 46	yes	
25-Aug	18:00	M	505	70283	7 - 47	yes	
27-Aug	15:35	F	590	70283	8 - 48	no	opercular punch lost
27-Aug	16:25	F	500	70283	9 - 49	yes	
28-Aug	15:30	M	560	70283	10 - 50	yes	some scars on side
28-Aug	15:30	M	470	70284	1 - 41	yes	
29-Aug	17:00	M	510	70284	2 - 42	yes	clean
31-Aug	9:30	M	530	70284	3 - 43	yes	
31-Aug	9:30	M	520	70284	4 - 44	yes	
31-Aug	9:30	?					escaped before sampling
31-Aug	15:30	M	490	70284	5 - 45	yes	
31-Aug	15:30	M	540	70284	6 - 46	yes	
01-Sep	15:00	M	595	70284	7 - 47	yes	
01-Sep	16:30	M	715	70284	8 - 48	no	forgot to take punch
02-Sep	15:15	M	510	70284	9 - 49	yes	
02-Sep	15:15	F	500	70284	10 - 50	yes	
02-Sep	15:15	M	680	70285	1 - 41	yes	
02-Sep	15:15	F	680	70285	2 - 42	yes	
02-Sep	15:15	F	450	70285	3 - 43	yes	
02-Sep	15:15	?					escaped before sampling
03-Sep	16:50	M	530	70285	4 - 44	yes	
03-Sep	17:30	F	630	70285	5 - 45	yes	
03-Sep	18:30	?					passed through box
03-Sep	19:05	F	630	70285	6 - 46	yes	
04-Sep	9:15	M	480	70285	7 - 47	yes	
05-Sep	9:00	F	395	70285	8 - 48	yes	green and sickly looking
05-Sep	18:45	F	640	70285	9 - 49	yes	scrape under dorsal fin
06-Sep	9:00	M	560	70285	10 - 50	yes	
06-Sep	15:00	M	570	70286	1 - 41	yes	
06-Sep	15:00	M	685	70286	2 - 42	yes	

Appendix Table 8. (continued)

Date	Time	Sex	NF Lgth (mm)	Scale Book		DNA	Comments
				Number	Position		
06-Sep	15:00	M	675	70286	3 - 43	yes	
06-Sep	15:00	M	505	70286	4 - 44	yes	
06-Sep	15:00	F	640	70286	5 - 45	yes	wart-like bumps all over body
06-Sep	15:00	F	600	70286	6 - 46	yes	operc. punched twice, first one ripped out
06-Sep	15:00	M	650	70286	7 - 47	yes	
06-Sep	15:00	M	585	70286	8 - 48	yes	
06-Sep	15:00	M	700	70286	9 - 49	yes	
07-Sep	9:30	M	600	70286	10 - 50	yes	started second vial for DNA
07-Sep	16:30	M	585	70289	1 - 41	yes	
07-Sep	17:00	F	490	70289	2 - 42	yes	
07-Sep	18:00	F	610	70289	3 - 43	yes	
07-Sep	19:00	F	570	70289	4 - 44	yes	gillnet marks
07-Sep	19:00	M	530	70289	5 - 45	yes	
07-Sep	19:45	M	690	70289	6 - 46	yes	
08-Sep	11:00	F	620	70289	7 - 47	yes	
08-Sep	14:45	F	625	70289	8 - 48	yes	rough shape; fungus on nose and dorsal
08-Sep	14:45	M	505	70289	9 - 49	yes	
08-Sep	14:45	M	420	70289	10 - 50	yes	very small
08-Sep	14:45	M	650	67413	1 - 41	yes	puncture wound near base of tail
08-Sep	14:45	M	480	67413	2 - 42	yes	
08-Sep	17:15	F	670	67413	3 - 43	yes	
08-Sep	19:00	M	570	67413	4 - 44	yes	clean
09-Sep	14:45	M		67413	5 - 45	yes	forgot length; clean
09-Sep	14:45	M	530	67413	6 - 46	yes	
09-Sep	16:00	M	710	67413	7 - 47	yes	
09-Sep	16:00	M	770	67413	8 - 48	yes	
09-Sep	17:00	M					escaped unsampled; rough shape
09-Sep	17:00	M	665	67413	9 - 49	yes	
09-Sep	18:30	M	565	67413	10 - 50	yes	
09-Sep	18:30	M	690	67414	1 - 41	yes	split tail
09-Sep	18:30	M	685	67414	2 - 42	yes	
10-Sep	9:00	M	495	67414	3 - 43	yes	clean
11-Sep	9:00	F	440	67414	4 - 44	yes	clean
11-Sep	15:00	M	510	67414	5 - 45	yes	
11-Sep	15:00	M	575	67414	6 - 46	yes	
11-Sep	16:15	M	620	67414	7 - 47	yes	
11-Sep	16:15	M	630	67414	8 - 48	yes	fresh scrape on right gill plate
11-Sep	17:15	M	495	67414	9 - 49	yes	clean
11-Sep	19:00	F	440	67414	10 - 50	yes	
11-Sep	19:00	F	660	67415	1 - 41	yes	
12-Sep	17:15	M	615	67415	2 - 42	yes	clean
12-Sep	17:15	M	650	67415	3 - 43	yes	warty
12-Sep	17:15	M	545	67415	4 - 44	yes	clean
12-Sep	17:15	M	540	67415	5 - 45	yes	
13-Sep	17:00	M	505	67415	6 - 46	yes	clean
14-Sep	16:15	M	690	67415	7 - 47	yes	
15-Sep	17:45	M	695	67415	8 - 48	yes	
19-Sep	9:30	M	470	67415	9 - 49	yes	torn left gill plate
19-Sep	16:00	M	720	67415	10 - 50	yes	split pectoral

Appendix Table 8. (continued)

Date	Time	Sex	NF Lgth (mm)	Scale Book		DNA	Comments
				Number	Position		
19-Sep	16:00	M	550	67416	1 - 41	yes	bad scars (gn?)
20-Sep	17:00	M	520	67416	2 - 42	yes	escaped downstream off fence
22-Sep	15:00	M	715	67416	3 - 43	yes	clean
22-Sep	15:00	M	510	67416	4 - 44	yes	clean
22-Sep	15:00	F	680	67416	5 - 45	yes	clean
22-Sep	15:00	F	675	67416	6 - 46	yes	marks on belly
23-Sep	17:00	M	755	67416	7 - 47	yes	very hooked nose
24-Sep	17:15	M	590	67416	8 - 48	yes	very hooked nose
25-Sep	16:15	F	610	67416	9 - 49	yes	scrape on head and gill plate
26-Sep	17:45	M	540	67416	10 - 50	yes	
26-Sep	17:45	M	680	67417	1 - 41	yes	
26-Sep	17:45	M	705	67417	2 - 42	yes	spot of fungus behind dorsal
26-Sep	17:45	M	690	67417	3 - 43	yes	
27-Sep	12:15	M	585	67417	4 - 44	yes	
27-Sep	17:45	M	685	67417	5 - 45	yes	
27-Sep	17:45	M	645	67417	6 - 46	yes	
28-Sep	17:00	M	750	67417	7 - 47	yes	fungus on pectoral and tail
28-Sep	17:00	M	585	67417	8 - 48	yes	
28-Sep	17:00	M	685	67417	9 - 49	yes	
28-Sep	17:00	M	580	67417	10 - 50	yes	
29-Sep	17:00	M	660	67418	1 - 41	yes	
30-Sep	9:15	M	625	67418	2 - 42	yes	
30-Sep	17:00	F	510	67418	3 - 43	yes	

Appendix Table 9. Daily staff gauge height, air and water temperature and weather conditions for the upper Sustut River, 2003.

Date	Time	Staff Gauge (m)	Temperature (°C)				Weather
			Water		Air		
			Max	Min	Max	Min	
31-Jul	8:45	0.345					completely clear
	20:45	0.340	21.5	N/A	32.0	N/A	mostly cloudy, thundershowers
1-Aug	8:15	0.350					overcast, raining
	20:00	0.370	15.5	12.5	19.5	7.0	mostly cloudy
2-Aug	8:30	0.370					mostly cloudy
	20:00	0.365	13.5	11.0	16.0	7.0	mostly cloudy
3-Aug	8:15	0.355					mostly cloudy
	20:00	0.345	12.5	9.5	18.0	0.0	mostly clear
4-Aug	8:15	0.335					clear
		0.325	12.0	8.5	20.0	-3.5	mostly cloudy
5-Aug	8:15	0.315					high broken clouds
	20:00	0.305	13.5	9.5	25.5	2.0	mostly clear

Appendix Table 9. (continued)

Date	Time	Staff Gauge (m)	Temperature (°C)				Weather
			Water		Air		
			Max	Min	Max	Min	
6-Aug	8:30	0.300					clear with a few thin clouds
	20:00	0.295	13.5	9.0	25.5	-3.5	partly cloudy
7-Aug	8:30	0.290					mostly clear
	20:00	0.285	14.5	10.0	29.0	0.0	partly cloudy
8-Aug	8:20	0.280					clear
	19:45	0.280	14.0	9.0	18.5	-1.5	partly cloudy
9-Aug	8:30	0.275					overcast
	21:15	0.275	13.5	10.0	11.0	6.5	mostly cloudy
10-Aug	8:30	0.275					cloudy
	20:00	0.275	11.0	9.5	13.0	1.0	mostly clear
11-Aug	8:30	0.270					mostly clear
	20:00	0.265	12.0	7.5	27.5	-4.5	mostly clear
12-Aug	8:40	0.260					mostly clear but hazy
	20:30	0.255	14.0	8.0	23.5	-3.5	clear
13-Aug	8:45	0.255					half clear / half cloudy
	21:00	0.255	15.0	10.0	25.5	4.5	mostly clear
14-Aug	8:30	0.255					clear
	20:30	0.255	14.0	9.5	23.5	0.0	clear
15-Aug	8:45	0.255					clear with thin clouds
	20:30	0.260	14.0	10.0	25.0	0.0	cloudy
16-Aug	9:00	0.265					overcast/raining
	21:00	0.265	13.5	10.5	20.5	8.5	partly cloudy
17-Aug	9:00	0.265					mostly cloudy
	20:30	0.260	13.0	9.5	18.5	5.0	overcast, raining
18-Aug	8:45	0.265					mostly cloudy, drizzling rain
	20:00	0.280	10.5	9.0	13.5	6.0	cloudy
19-Aug	8:45	0.285					mostly cloudy
	20:15	0.280	11.5	8.0	18.5	0.0	mostly clear
20-Aug	8:45	0.270					mostly cloudy
	20:30	0.265	11.5	9.0	16.0	2.5	mostly cloudy
21-Aug	8:30	0.260					cloudy
	20:00	0.265	11.0	8.5	15.0	3.5	high clouds
22-Aug	9:00	0.260					high broken clouds
	20:00	0.265	10.0	7.5	7.5	-2.5	partly cloudy
23-Aug	9:00	0.265					mostly cloudy, light rain
	20:00	0.260	9.5	5.5	14.0	-2.5	overcast, light rain
24-Aug	8:45	0.260					mostly cloudy
	20:00	0.255	9.5	7.0	15.0	3.0	partly cloudy
25-Aug	9:00	0.250					clear
	20:00	0.245	11.0	6.0	19.0	-5.0	clear
26-Aug	9:00	0.250					overcast
	20:00	0.240	10.0	7.0	14.0	-3.0	clear
27-Aug	9:00	0.240					mostly clear
	20:00	0.230	11.5	6.5	23.0	-4.0	clear
28-Aug	9:00	0.230					clear
	20:00	0.220	11.5	6.0	25.0	-4.0	mostly clear

Appendix Table 9. (continued)

Date	Time	Staff Gauge (m)	Temperature (°C)				Weather
			Water		Air		
			Max	Min	Max	Min	
29-Aug	8:30	0.215					mostly clear
	20:00	0.210	12.0	7.0	25.0	-4.0	partly cloudy
30-Aug	8:45	0.215					mostly clear
	20:00	0.225	11.5	8.0	23.5	-1.5	overcast,drizzling rain
31-Aug	9:15	0.245					overcast drizzling rain
	20:30	0.255	10.0	9.0	15.0	3.5	partly clear
1-Sep	8:45	0.250					mostly cloudy
	20:00	0.245	9.5	7.5	15.5	-0.5	broken clouds
2-Sep	9:05	0.235					low clouds
	20:00	0.245	10.0	8.5	16.5	6.0	drizzling rain
3-Sep	9:10	0.250					mostly cloudy
	19:30	0.255	10.0	8.0	16.0	1.5	cleared off in afternoon
4-Sep	9:00	0.250					clear
	19:40	0.245	9.5	5.5	19.5	-6.5	mostly cloudy,light mist
5-Sep	9:00	0.245					overcast, light rain
	19:45	0.260	9.0	8.0	10.5	4.5	overcast, light rain
6-Sep	8:45	0.280					cloudy light rain
	20:00	0.305	9.5	8.5	13.0	6.0	mostly cloudy
7-Sep	9:00	0.355					overcast,raining
	20:00	0.435	9.0	8.5	11.5	5.5	cloudy
8-Sep	9:00	0.485					mostly cloudy, light rain
	20:00	0.450	9.0	8.5	14.5	2.0	mostly clear
9-Sep	9:00	0.420					clear,foggy
	20:00	0.400	9.5	5.5	18.5	-4.5	clear
10-Sep	8:45	0.385					overcast,light rain
	20:00	0.410	8.5	6.5	8.5	-0.5	overcast,light rain
11-Sep	8:45	0.435					mostly cloudy
	20:30	0.415	8.5	5.5	14.0	3.5	mostly clear
12-Sep	9:00	0.395					high broken clouds
	19:45	0.375	8.5	6.5	15.5	0.0	mostly clear
13-Sep	9:15	0.370					overcast,light rain
	19:45	0.375	8.5	6.5	10.0	3.0	mostly clear
14-Sep	9:15	0.380					overcast, light mist
	20:00	0.380	8.5	6.0	11.0	2.5	overcast, light rain
15-Sep	9:15	0.380					overcast, light rain
	19:30	0.375	8.0	6.0	4.0	-1.5	mostly cloudy
16-Sep	9:15	0.365					mostly cloudy
	19:15	0.350	5.0	4.0	2.0	-4.0	mostly cloudy
17-Sep	9:15	0.335					mostly cloudy
	19:00	0.335	4.5	3.0	2.0	-2.5	partly clear
18-Sep	9:30	0.335					overcast,snowy 3" last night
	18:30	0.335	3.5	2.0	3.5	-2.5	overcast drizzling rain
19-Sep	9:30	0.420					mostly cloudy
	18:45	0.425	5.0	3.5	10.0	1.0	partly cloudy
20-Sep	9:00	0.400					partly cloudy
	19:00	0.375	5.0	4.0	10.0	1.5	overcast, light mist

Appendix Table 9. (continued)

Date	Time	Staff Gauge (m)	Temperature (°C)				Weather
			Water		Air		
			Max	Min	Max	Min	
21-Sep	8:45	0.375					overcast, light rain
	19:00	0.375	5.5	4.5	8.0	1.5	overcast, mist
22-Sep	9:00	0.390					mostly cloudy
	19:00	0.385	5.0	4.5	8.0	-2.0	50% cloud cover
23-Sep	8:20	0.370					mostly clear, light clouds
	19:00	0.365	4.5	3.0	8.0	-8.5	overcast
24-Sep	9:30	0.355					overcast, raining
	19:00	0.375	4.5	4.0	7.5	-1.5	clear patches
25-Sep	9:15	0.375					overcast, raining
	19:00	0.385	5.5	4.5	7.0	2.0	clear patches
26-Sep	9:00	0.385					mostly clear
	19:00	0.385	6.0	4.5	14.5	4.0	a few clear patches
27-Sep	9:30	0.370					mostly cloudy
	19:00	0.365	7.5	5.5	14.0	4.5	mostly clear
28-Sep	9:00	0.355					clear with a few light clouds
	19:00	0.355	8.0	5.5	20.0	-2.5	50% cloud cover
29-Sep	9:00	0.355					clear
	19:00	0.360	7.5	5.0	19.5	-4.5	clear
30-Sep	9:15	0.355					clear
	19:00	0.355	7.5	4.5	20.0	-6.5	completely clear
1-Oct	11:00	0.355					clear
	13:00	0.285					staff taken after fence removal

Appendix Table 10. Statistical week definitions for 2003.

Statistical Week	Calendar Week
7-5	July 27 to August 2
8-1	August 3 to 9
8-2	August 10 to 16
8-3	August 17 to 23
8-4	August 24 to 30
9-1	August 31 to September 6
9-2	September 7 to 13
9-3	September 14 to 20
9-4	September 21 to 27

Appendix Table 11. Age data based on scale analysis for all steelhead sampled at the Sustut River fence, 2003.

Date	Sex	NF Lgth (mm)	Scale Book		Cond. Code	Age	Non- Pref.	Comments
			Number	Position				
3-Aug	F	725	70251	1~41	1	4.2+		
3-Aug	F	790	70251	2~42	1	4.2+		
16-Aug	M	860	70251	3~43	1	4.3+	*	
16-Aug	M	730	70251	4~44	6	R.2+		
16-Aug	F	735	70251	5~45	1	4.2+		
16-Aug	M	850	70251	6~46	8	4.3+		vague 3rd ma on scale edge
16-Aug	F	720	70251	7~47	6	R.2+	*	
16-Aug	F	675	70251	8~48	1	4.2+		
16-Aug	M	880	70251	9~49	1	4.3+		
16-Aug	F	720	70251	10~50	1	4.2+		
16-Aug	M	755	70252	1~41	1	4.2+		
16-Aug	F	770	70252	2~42	1	4.3+		
16-Aug	M	715	70252	3~43	1	4.2+		
16-Aug	F	730	70252	4~44	1	4.2+	*	
16-Aug	F	795	70252	5~45	1	4.2S1+		
16-Aug	F	740	70252	6~46	5	4.2+		
16-Aug	F	765	70252	7~47	1	4.3+		
16-Aug	F	700	70252	8~48	1	5.2+		
19-Aug	M	780	70252	9~49	6	R.2+		
19-Aug	F	630	70252	10~50	1	4.2+		
19-Aug	F	745	70254	1~41	1	4.2+		
19-Aug	F	680	70254	2~42	1	4.2+		
19-Aug	F	730	70254	3~43	1	5.2+		
19-Aug	M	835	70254	4~44	6	R.3+		
19-Aug	M	795	70254	5~45	1	4.3+	*	
19-Aug	M	695	70254	6~46	1	4.2+		
19-Aug	F	720	70254	7~47	1	4.2+		
23-Aug	F	770	70254	8~48	1	4.2+		
23-Aug	F	820	70254	9~49	1	5.3+		
23-Aug	F	835	70254	10~50	6	R.3+		
23-Aug	M	745	70255	1~41	1	4.2+		
23-Aug	F	740	70255	2~42	6	R.2+		
23-Aug	F	690	70255	3~43	1	3.3+		small length for age
23-Aug	F	735	70255	4~44	1	4.2+		
23-Aug	F	710	70255	5~45	1	4.2+	*	
23-Aug	M	920	70255	6~46	2	3.4+		marine zone in p/c
23-Aug	M	795	70255	7~47	1	4.3+		
23-Aug	F	725	70255	8~48	1	4.2+		
23-Aug	F	680	70255	9~49	1	4.2+		
23-Aug	F	730	70255	10~50	6	R.2+		
23-Aug	F	625	70256	1~41	6	R.2+		
23-Aug	M	735	70256	2~42	2	5.2+		center distorted
23-Aug	M	740	70256	3~43	1	4.2+		
26-Aug	F	700	70256	4~44	1	4.2+		
26-Aug	M	755	70256	5~45	1	4.2+		
26-Aug	F	700	70256	6~46	1	4.2+		
26-Aug	M	890	70256	7~47	1	4.3+		

Appendix Table 11. (continued)

Date	Sex	NF Lgth (mm)	Scale Book		Cond. Code	Age	Non- Pref.	Comments
			Number	Position				
26-Aug	F	690	70256	8~48	1	4.2+		
26-Aug	M	700	70256	9~49	2	4.2+		vague 3rd fw ann, others rg
26-Aug	M	720	70256	10~50	1	4.2+		
26-Aug	M	830	70257	1~41	1	4.3+		
26-Aug	F	710	70257	2~42	1	4.2+		
26-Aug	F	810	70257	3~43	1	3.3+		
26-Aug	M	760	70257	4~44	6	R.2+		
26-Aug	M	730	70257	5~45	5	4.2+		
26-Aug	F	690	70257	6~46	1	4.2+		
26-Aug	F	690	70257	7~47	1	4.2+		
26-Aug	M	710	70257	8~48	1	4.2+		
26-Aug	F	790	70257	9~49	1	4.3+		
26-Aug	F	785	70257	10~50	9	4.3+		lacking 1st fw ann., poss. 3.3+
26-Aug	F	730	70258	1~41	1	4.2+		
26-Aug	M	755	70258	2~42	1	4.2+		
29-Aug	M	610	70258	3~43	1	4.2+		small marine growth
29-Aug	F	740	70258	4~44	6	R.2+		
29-Aug	M	820	70258	5~45	1	4.2+		
29-Aug	F	700	70258	6~46	6	R.2+	*	
29-Aug	M	945	70258	7~47	1	4.4+	*	
29-Aug	F	690	70258	8~48	1	4.2+		
29-Aug	F	680	70258	9~49	1	4.2+		
29-Aug	F	710	70258	10~50	1	4.2+		
31-Aug	M	910	70259	1~41	1	3.3+		was recorded as book 70258
31-Aug	F	690	70259	2~42	1	4.2+		was recorded as book 70258
31-Aug	M	900	70259	3~43	1	4.3+		was recorded as book 70258
31-Aug	F	730	70259	4~44	1	4.2+		was recorded as book 70258
31-Aug	F	710	70259	5~45	5	4.2+		was recorded as book 70258
31-Aug	F	740	70259	6~46	1	4.2+		was recorded as book 70258
31-Aug	F	680	70259	7~47	1	4.2+		was recorded as book 70258
31-Aug	F	730	70259	8~48	5	4.2+		was recorded as book 70258
31-Aug	M	870	70259	9~49	6	R.3+		was recorded as book 70258
31-Aug			70259	10~50	1	4.2+		was recorded as book 70258
31-Aug			70260	1~41	1	4.2+		
31-Aug			70260	2~42	1	4.2+		
31-Aug			70260	3~43	2	3.3+		may be lacking 1st fw ann.
31-Aug			70260	4~44	1	4.3+		
31-Aug			70260	5~45	1	4.3+		
31-Aug			70260	6~46	1	3.3+		
31-Aug			70260	7~47	1	4.2+		
31-Aug			70260	8~48	1	4.2+		
31-Aug			70260	9~49	2	3.3+		may be lacking 1st fw ann.
31-Aug			70260	10~50	6	R.2+		
31-Aug			70261	1~41	1	4.2+		
31-Aug			70261	2~42	1	4.2+		
31-Aug			70261	3~43	1	5.2+		
31-Aug			70261	4~44	1	4.2+		
31-Aug			70261	5~45	1	4.2+		
31-Aug			70261	6~46	1	4.2+		

Appendix Table 11. (continued)

Date	Sex	NF Lgth (mm)	Scale Book		Cond. Code	Age	Non- Pref.	Comments
			Number	Position				
31-Aug			70261	7~47	9	4.2+		lacking 1st fw ann.
31-Aug			70261	8~48	1	4.2+		
31-Aug			70261	9~49	1	4.3+		
31-Aug			70261	10~50	6	R.2+		
31-Aug			70262	1~41	1	4.2+		
31-Aug			70262	2~42	9	4.2+		vague 1st fw ann.
31-Aug			70262	3~43	1	5.2+		
31-Aug			70262	4~44	6	R.2+		
31-Aug			70262	5~45	6	R.2+		
31-Aug			70262	6~46	1	4.2+		
31-Aug			70262	7~47	1	4.3+		
31-Aug			70262	8~48	1	4.2+	*	
31-Aug			70262	9~49	5	4.2+	*	
31-Aug	M	790	70262	10~50	1	4.2+		
31-Aug	M	760	70263	1~41	1	5.2+		
31-Aug	F	680	70263	2~42	1	4.2+		
31-Aug	F	710	70263	3~43	1	5.2+	*	
31-Aug	M	680	70263	4~44	1	5.2+		vague 1st fw ann.
31-Aug	M	730	70263	5~45	1	5.2+		vague 1st fw ann.
31-Aug	M	760	70263	6~46	1	4.2+		
31-Aug	M	760	70263	7~47	1	4.2+		
31-Aug	M	710	70263	8~48	1	3.1S1+		
31-Aug	F	710	70263	9~49	1	4.2+		
31-Aug	F	640	70263	10~50	1	4.2+		
31-Aug	F	710	70264	1~41	1	4.2+		
31-Aug	F	730	70264	2~42	1	4.2+		
31-Aug	M	830	70264	3~43	1	4.3+		
31-Aug	F	830	70264	4~44	1	4.3+		
31-Aug	F	690	70264	5~45	1	4.2+		
31-Aug	F	690	70264	6~46	9	4.2+		lacking 1st fw ann.
31-Aug	F	710	70264	7~47	1	4.2+		
31-Aug	F	750	70264	8~48	1	4.2+		
31-Aug	F	710	70264	9~49	1	5.2+		
31-Aug	F	720	70264	10~50	6	R.2+		
31-Aug	M	750	70265	1~41	2	3.2+		may be lacking 1st fw ann.
4-Sep	M	730	70265	2~42	1	4.2+		
4-Sep	M	780	70265	3~43	5	4.2+		
4-Sep	M	840	70265	4~44	1	4.3+		
4-Sep	F	740	70265	5~45	1	4.2+		
4-Sep	F	840	70265	6~46	1	4.3+		
4-Sep	F	690	70265	7~47	1	5.2+		
4-Sep	M	880	70265	8~48	1	4.3+	*	vague 1st fw ann.
4-Sep	F	680	70265	9~49	1	4.2+	*	
4-Sep	M	730	70265	10~50	1	4.2+	*	
4-Sep	F	700	70266	1~41	1	4.2+		
4-Sep	F	735	70266	2~42	1	4.2+		
4-Sep	F	690	70266	3~43	1	4.2+		
4-Sep	M	730	70266	4~44	1	5.2+		
4-Sep	F	690	70266	5~45	6	R.2+		

Appendix Table 11. (continued)

Date	Sex	NF Lgth (mm)	Scale Book		Cond. Code	Age	Non- Pref.	Comments
			Number	Position				
4-Sep	F	810	70266	6~46	1	3.3+		
4-Sep	F	700	70266	7~47	1	4.2+		
4-Sep	F	720	70266	8~48	1	5.2+		
4-Sep	F	730	70266	9~49	1	4.2+		
4-Sep	M	940	70266	10~50	1	4.4+		
1-Sep	M	595	70284	7~47	-	-		no scale book
1-Sep	F		70284	8~48	-	-		no scale book
1-Sep	F		70284	9~49	-	-		no scale book
1-Sep	F	705	70287	1~41	1	4.2+		
1-Sep	F	745	70287	2~42	1	4.2+	*	
1-Sep	M	750	70287	3~43	6	R.2+	*	
1-Sep	M	725	70287	4~44	5	4.2+	*	
1-Sep	F	760	70287	5~45	1	5.2+		
1-Sep	F	750	70287	6~46	5	4.2+		
1-Sep	F	850	70287	7~47	1	5.2S1+		
1-Sep	F	680	70287	8~48	1	4.2+	*	
1-Sep	F	685	70287	9~49	6	R.2+		
1-Sep	F	705	70287	10~50	1	4.2+		
1-Sep	F	740	70288	1~41	1	3.3+		
1-Sep	M	880	70288	2~42	1	4.3+	*	
1-Sep	F	880	70288	3~43	1	4.3+	*	
1-Sep	F	720	70288	4~44	1	4.2+	*	
1-Sep	F	720	70288	5~45	1	4.2+		
1-Sep	M	795	70288	6~46	6	R.3+		
1-Sep	F	720	70288	7~47	1	4.2+		
1-Sep	F	740	70288	8~48	1	4.2+		
1-Sep	M	810	70288	9~49	1	4.2+		
1-Sep	F	720	70288	10~50	1	4.2+		
1-Sep	M	760	67401	1~41	1	4.2+		
1-Sep	M	870	67401	2~42	1	4.3+		
1-Sep	F	690	67401	3~43	1	3.2+		
1-Sep	M	720	67401	4~44	1	4.2+	*	
1-Sep	M	815	67401	5~45	1	3.3+	*	
1-Sep	F	720	67401	6~46	1	4.2+	*	
1-Sep	F	685	67401	7~47	1	4.2+		
1-Sep	F	700	67401	8~48	1	5.2+	*	
1-Sep	M	750	67401	9~49	1	4.2+		
1-Sep	F	810	67401	10~50	1	4.3+		vague 1st fw ann.
1-Sep	M	715	67402	1~41	1	4.2+		
1-Sep	F	670	67402	2~42	1	4.2+		
1-Sep	M	780	67402	3~43	1	4.2+		
1-Sep	M	790	67402	4~44	1	4.2+	*	
1-Sep	M	670	67402	5~45	1	4.2+		
1-Sep	M	765	67402	6~46	1	4.2+		
1-Sep	F	740	67402	7~47	6	R.2+		
1-Sep	M	740	67402	8~48	1	4.2+		
1-Sep	F	820	67402	9~49	1	4.2S1+		
1-Sep	M	940	67402	10~50	6	R.3+	*	
1-Sep	M	790	67403	1~41	1	4.3+	*	

Appendix Table 11. (continued)

Date	Sex	NF Lgth (mm)	Scale Book		Cond. Code	Age	Non- Pref.	Comments
			Number	Position				
1-Sep	M	710	67403	2~42	1	4.2+		
1-Sep	M	730	67403	3~43	1	4.2+		
1-Sep	F	840	67403	4~44	1	4.3+		
1-Sep	M	780	67403	5~45	1	4.2+		
1-Sep	M	870	67403	6~46	1	4.3+	*	
1-Sep	F	780	67403	7~47	1	4.3+	*	
1-Sep	F	685	67403	8~48	1	4.2+		ms not on other scales
1-Sep	M	720	67403	9~49	1	4.2+		
1-Sep	M	815	67403	10~50	1	4.3+		
1-Sep	F	730	67404	1~41	1	4.2+	*	
1-Sep	F	750	67404	2~42	1	4.2+		
1-Sep	F	670	67404	3~43	1	4.2+		
1-Sep	M	800	67404	4~44	1	4.2+		
1-Sep	M	800	67404	5~45	1	4.2+		
1-Sep	M	870	67404	6~46	1	5.3+		
27-Sep	M	720	67404	7~47	6	R.R+		
27-Sep	F	670	67404	8~48	6	R.2+	*	
27-Sep	M	810	67404	9~49	1	4.2+		
27-Sep	M	880	67404	10~50	1	3.3+		
27-Sep	M	810	67405	1~41	5	4.2+		
27-Sep	M	780	67405	2~42	1	4.2+	*	
27-Sep	M	785	67405	3~43	1	4.3+	*	
27-Sep	F	725	67405	4~44	1	4.2+	*	
27-Sep	F	710	67405	5~45	1	4.2+		
27-Sep	M	720	67405	6~46	1	4.2+		
27-Sep	F	740	67405	7~47	1	4.3+		
27-Sep	F	680	67405	8~48	1	4.2+		
27-Sep	F	700	67405	9~49	1	4.2+		
27-Sep	F	665	67405	10~50	6	R.2+		
27-Sep	F	720	67406	1~41	5	4.2+		
27-Sep	F	720	67406	2~42	1	4.2+		
27-Sep	M	590	67406	3~43	1	4.1+		
27-Sep	F	890	67406	4~44	1	4.3S1+		
29-Sep	F	720	67406	5~45	1	5.2+		was recorded as book 67405

Appendix Table 12. Scale condition code definitions.

Condition Code	Definition
1	good condition
2	poor condition or questionable age (i.e. difficult to interpret due to poor quality)
3	freshwater age unreadable (e.g. U.2+)
4	unreadable (e.g. U.U+)
5	starting to regenerate (may underestimate freshwater age)
6	regenerated (e.g. R.2+)
7	missing
8	resorption at scale edge (e.g. Last marine annulus just visible on edge of scale)
9	first freshwater annulus very vague, but must be present due to high curculi count and spacing relative to other freshwater annuli.

Appendix Table 13. Summary, by sex and age, of all steelhead sampled at the Sustut River fence, 2003.

Age	Male		Female		No Sex		Total	
	N	%	N	%	N	%	N	%
No Age	1	1.2%	2	1.7%		0.0%	3	1.3%
3.1S1+	1	1.2%		0.0%		0.0%	1	0.4%
3.2+	1	1.2%	1	0.9%		0.0%	2	0.9%
3.3+	3	3.7%	4	3.4%	3	10.0%	10	4.4%
3.4+	1	1.2%		0.0%		0.0%	1	0.4%
Total	6	7.3%	5	4.3%	3	10.0%	14	6.1%
4.1+	1	1.2%		0.0%		0.0%	1	0.4%
4.2+	40	48.8%	71	61.2%	17	56.7%	128	56.1%
4.2S1+		0.0%	2	1.7%		0.0%	2	0.9%
4.3+	17	20.7%	11	9.5%	4	13.3%	32	14.0%
4.3S1+		0.0%	1	0.9%		0.0%	1	0.4%
4.4+	2	2.4%		0.0%		0.0%	2	0.9%
Total	60	73.2%	85	73.3%	21	70.0%	166	72.8%
5.2+	5	6.1%	9	7.8%	2	6.7%	16	7.0%
5.2S1+		0.0%	1	0.9%		0.0%	1	0.4%
5.3+	1	1.2%	1	0.9%		0.0%	2	0.9%
Total	6	7.3%	11	9.5%	2	6.7%	19	8.3%
R.2+	4	4.9%	12	10.3%	4	13.3%	20	8.8%
R.3+	4	4.9%	1	0.9%		0.0%	5	2.2%
R.R+	1	1.2%		0.0%		0.0%	1	0.4%
Total	9	11.0%	13	11.2%	4	13.3%	26	11.4%
Grand Total	82	100.0%	116	100.0%	30	100.0%	228	100.0%

Appendix Table 14. Number of steelhead past the fence and number and percent of steelhead sampled, by sex, for statistical weeks 8-1 to 9-4.

Statistical Week	Steelhead Past the Fence			Steelhead Sampled					
				Male		Female		Total	
	Male	Female	Total	n	%	n	%	n	%
8-1	1	3	4	1	100%	1	33%	2	50%
8-2	17	26	43	2	12%	2	8%	4	9%
8-3	40	65	105	9	23%	18	28%	27	26%
8-4	76	117	193	16	21%	23	20%	39	20%
9-1	172	230	402	20	12%	36	15%	56	14%
9-2	83	109	192	24	29%	23	21%	47	24%
9-3	29	32	61	1	3%	2	6%	3	5%
9-4	35	42	77	12	34%	12	29%	24	31%