Enumeration of Adult Steelhead

in the

Upper Sustut River 1999

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Skeena Fisheries Report SK 126

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Abstract

The upper Sustut River steelhead (*Oncorhynchus mykiss*) population was enumerated from August 1, 1999 to September 30, 1999 for the eighth consecutive year. A floating PVC fence located approximately 500 m. upstream of the confluence of the Sustut River with Moosevale Creek, was used for enumeration. Seven hundred thirty-one (731) adult steelhead were passed through the fence between August 18 and September 30. An additional 169 steelhead were counted downstream of the fence to the tail-out of the Moosevale Creek confluence pool on September 29. Accounting for 4 steelhead that migrated through the fence after the visual survey, the total estimated steelhead escapement to the upper Sustut River was 896 fish. The 1999 escapement was more than twice the number of fish required for maximum sustainable yield (418), and was 86-percent of the estimated carrying capacity (1036) for the Upper Sustut system. The steelhead mortality rate due to handling at the fence was 0.3 percent. In 1999, 8.5-percent of steelhead had gillnet marks. The percentage of gillnet marked fish peaked at 11.4 percent on September 12 and 8.5 percent of the total run had gillnet marks. Between July 29 and September 30, a total of 609 chinook salmon (*O. tshawytscha*), 221 sockeye salmon (*O. nerka*), 30 coho salmon (*O. kisutch*), 7 bull trout (*Salvelinus confluentus*), 5 resident rainbow trout (*O. mykiss*) and 10 Rocky Mountain whitefish (*Prosopium williamsoni*) were counted passing upstream of the fence. The first steelhead arrived at the fence on August 18 and by September 17, 50 percent of steelhead had moved upstream. In the one week period between September 14 and 20th more than 52% (387 of 731) of the run passed the fence. Female steelhead run timing lagged behind males by one day (ANOVA F= 4.27, $P < 0.05$). Eighteen previously tagged upper Sustut steelhead were recaptured in 1999. Fifteen were repeat spawners from 1997 that were counted at the fence in 1999. Two 1997 Sustut fence tags were recovered in a First Nations fishery on the Skeena River just upstream of the Kispiox River mouth. The last fish had a Sustut fence tag, but the tag was lost in the trap box before it was recovered. Male steelhead (mean = 84.8 cm) were significantly longer than female steelhead (mean = 75.6 cm; Student's t-test = 21.79, $P > 0.05$). In 1999, 6.1% of male steelhead and 9.9% of female steelhead passing the fence were gillnet marked. The fork-lengths of gillnet marked and unmarked fish were similar for each sex (Students t-test Males t=1.97, P>0.05; Females t=1.96, P>0.05).

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1.0 Introduction

In 1999, with a reduced commercial fishing effort for sockeye salmon due to conservation concerns over upper Skeena coho stocks and low sockeye abundance, steelhead escapement to the Upper Sustut River was the second highest recorded at the fence. For the 8th consecutive year, adult steelhead were enumerated on the upper Susut River in a continued effort to index early run steelhead population levels and trends for the upper Skeena watershed (Spence *et al*. 1990; Bustard 1993; Saimoto 1994; Saimoto 1995; Parken and Morten 1996; Parken *et al.* 1997; Williamson 1998, 1999a, 1999b). Upper Skeena River steelhead are of particular concern for fisheries managers because they form the basis of an economically valuable sport fishery and are caught incidentally by commercial and First Nations fisheries for more abundant sockeye (*Oncorhynchus mykiss*) and pink (*O. gorbuscha*) salmon (Ward *et al.* 1993; Cox-Rogers 1994).

The objectives of the 1999 enumeration program were:

1. to index the Upper Sustut River steelhead population,
2. to examine the sex, number, growth, and size distribution of previously tagged steelhead that returned in 1999,
3. to examine the sex ratio, and size distribution 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 qualitatively confirm the effectiveness of methods developed in previous years that were implemented to reduce stress and incidental mortality of fish (steelhead in particular) handled at the Sustut Fence.

2.0 Study Area

The Sustut River is an upper Skeena River tributary in north central British Columbia (Figure 1). The Sustut River's headwaters originate in the Omenica Mountains approximately 220-km north of Smithers, BC. The Sustut River flows for 8-km north-west from Sustut and Mud lakes where it joins Johanson Creek near the main spawning area for Upper Sustut steelhead population (Bustard 1993). The river then flows three kilometers west to Moosevale Creek before it turns southwest for approximately 100 km to its confluence with the Skeena River. The Sustut River drains approximately 3,574 km^2 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(char) (*Salvelinus confluentus*), Dolly Varden char (*S. malma*), and Rocky Mountain whitefish (*Prosopium williamsoni*), Bustard 1993; Saimoto 1994; Saimoto 1995) and burbot (*Lota lota*)[1]. The physical boundary for 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). Whereas, the physical boundary for 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). Upper Sustut steelhead over-winter, spawn and rear at elevations above sea level exceeding 1280 meters.

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 Bear River (Figures 2, 3). The fence was operated and considered fish-tight from the July 29, 1999 until the evening of September 30, 1999. Fish holding between the fence and the Moosevale Creek confluence pool were counted in a visual survey on September 29 by two streamside observers using polarized sunglasses. The count was conducted midday with the sun shining on the river from directly overhead. 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 higher migration. It was observed that the handling of fish would often stop migration for half an hour or more. Therefore, counting and tagging was minimized to 1-3 periods in the evening hours even during relatively high levels of migration to avoid scaring the fish and restricting movement during this time. Fence modifications that were built in 1998 (Williamson 1999b) to reduce both stress levels and mortality caused by the original fence design and handling procedures were used again in 1999.

All fish passing the fence were identified to species level by experienced personnel, using visual characteristics described in Scott and Crossman (1973) and McPhail and Carveth (1994). All steelhead were tagged on the right side below the dorsal fin and measured for fork-length to the nearest millimeter. Sex, gillnet marks, scars, wounds, as well as general condition and unusual observations were also recorded for all steelhead (Appendix Table 6). Yellow uniquely numbered t-bar anchor tags were used for steelhead tagging. Adipose tissue was collected from 100 steelhead to aid in stock identification and molecular genetic comparisons between upper/lower Sustut steelhead and

[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.

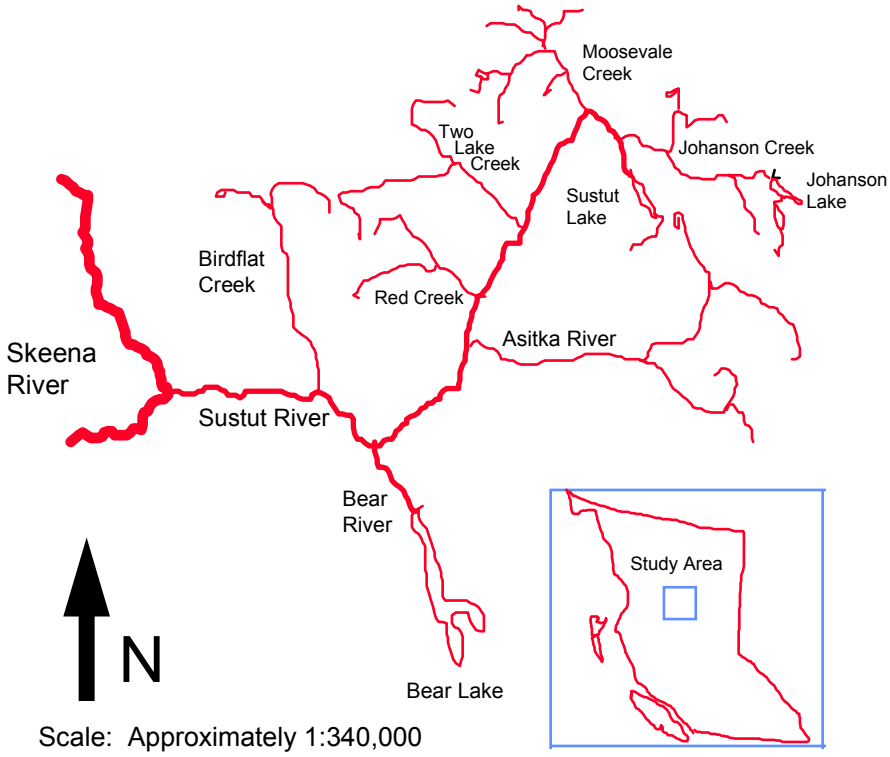

Figure 1. The Sustut River and major tributaries (from Saimoto 1995).

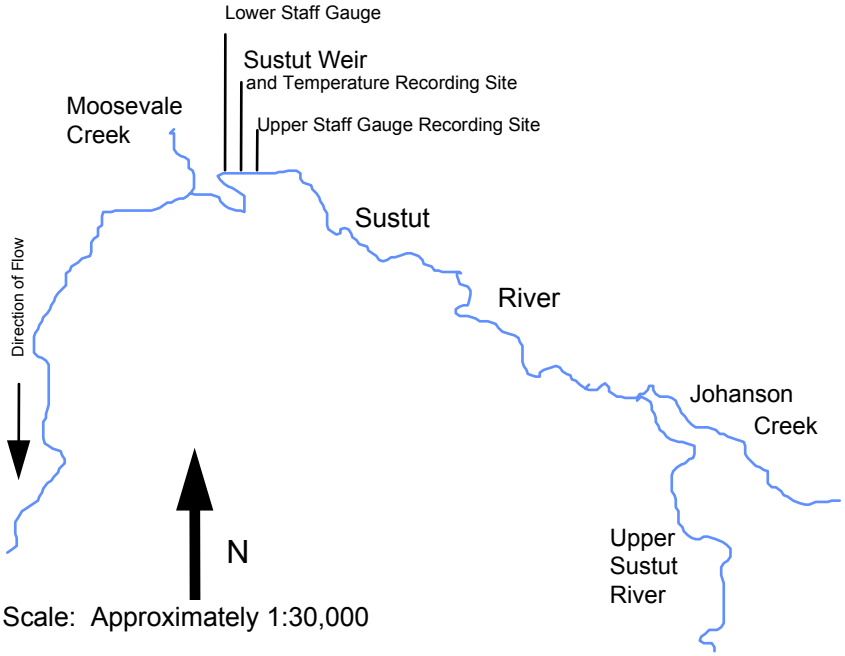

Figure 2. Detailed map of the study area (adapted from Saimoto 1995).

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.

resident rainbow trout populations. A sample of 10 scales, taken mid-laterally between the dorsal and anal fins, was collected from the same 100 steelhead. Scales will be used for age estimates. All fish mortalities due to fence operation or handling by personnel as well as post spawn carcasses were recorded (Appendix Tables 1, 6,7,10, 12). Adipose tissue and scales were collected from four resident rainbow trout and seven bull trout (Appendix Tables 7, 8). Adipose tissue and scales were collected from 67 chinook, 23 sockeye and 31 coho salmon (Appendix Tables 9, 11, 13).

3.2 Steelhead Recaptures

Sex, 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 compared to the Ministry of Environment, Lands and Parks Skeena Region TAGS database.

3.3 Steelhead Migration and Physical Data

Stream temperatures were recorded hourly at the fence by an electronic temperature data logger (Onset Optic Stow Away Temp) and once daily by personnel at the fence using a Brannon minimum-maximum thermometer. In 1999 a max/min thermometer was unavailable until August 17. Before August 17, the stream temperature was recorded in the morning and evening using a standard glass thermometer. Water levels were recorded in the morning and the evening at the upper staff-gauge site. The upper site was used in 1999 (Figure 2) because the lower site was destroyed before 1998 by a large tree that fell into the river. After August 17, air temperature was recorded daily using a Brannon minimum-maximum thermometer. Ambient weather was also recorded daily.

3.4 Steelhead Length Distributions

Steelhead fork-lengths were measured to the nearest 0.1 cm. with an Evazote (blue camping foam) lined measuring tray. Fork-lengths were compared using length-frequency histograms and mean fork-lengths of male and female steelhead were compared (Student's t-test).

3.5 Steelhead Gillnet Marks

The presence of gill net marks was recorded for all steelhead. The cumulative daily percentage of steelhead with gillnet marks was compared with the cumulative total number of steelhead for the duration of the run. The mean fork-lengths of gillnet marked and unmarked steelhead were compared with for each sex (Students t-test).

3.6 Male and Female Steelhead Run Timing

The run timing of male and female steelhead was compared using a time-series histogram. The mean migration date passed the fence for male and female steelhead was compared using ANOVA.

3.7 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 on August 10 was used to indicate the relative abundance of early run Skeena River steelhead (upper Sustut River steelhead). For tagged upper Sustut River steelhead, August 10 was the last date to migrate past the Tyee test fishery (Parken *et al.* 1997).

In 1996, the relative abundance of upper Sustut River steelhead was standardized into a population index to reduce the variability resulting from the different enumeration methods (Parken *et al.* 1997). Parken *et al.* (1997) found that the August 10 cumulative Tyee steelhead index correlated positively with and was a significant predictor of the Upper Sustut steelhead index. However, with few data points, the predictive relationship was dependent on an outlying datum (1986 index). In 1997, the relation between the Tyee and Upper Sustut index was not significant due to what was thought to be an especially anomalous year for migration. For the 1999 data, correlation analysis was use to compare the Sustut steelhead index (September 30) with the cumulative August 10 Tyee steelhead index. A simple linear regression model was then used *a posteriori* to determine if the August 10 index was a significant predictor of the Upper Sustut Steelhead index.

4.0 Results

4.1 Steelhead Enumeration

After fence operations ceased September 30, 1999, 731 steelhead had passed upstream of the fence (Appendix Table 6). An additional 169 steelhead were observed between the fence and the Moosevale Creek confluence pool on September 29. Between the final visual survey and the last fence count on September 30, 4 steelhead had migrated upstream. Assuming no additional migration from downstream of Moosevale Creek after the count was completed, the estimated escapement estimate for 1999 upper Sustut River steelhead run was 896.

The first steelhead passed through the fence on August 18 and by September 17, 50% of the run had passed the fence (Figure 4; Table 1). In the one week period between September 14 and 20th more than 52% (387 of 731) of the run passed the fence. The observed handling mortality at the fence was

0.3% (2 steelhead) (Appendix Table 1). Both mortalities were found stranded on the fence in the morning. One of the two fish had a fungal infection and appeared to be unhealthy. 8.5 percent of the steelhead passing the fence had gillnet marks.

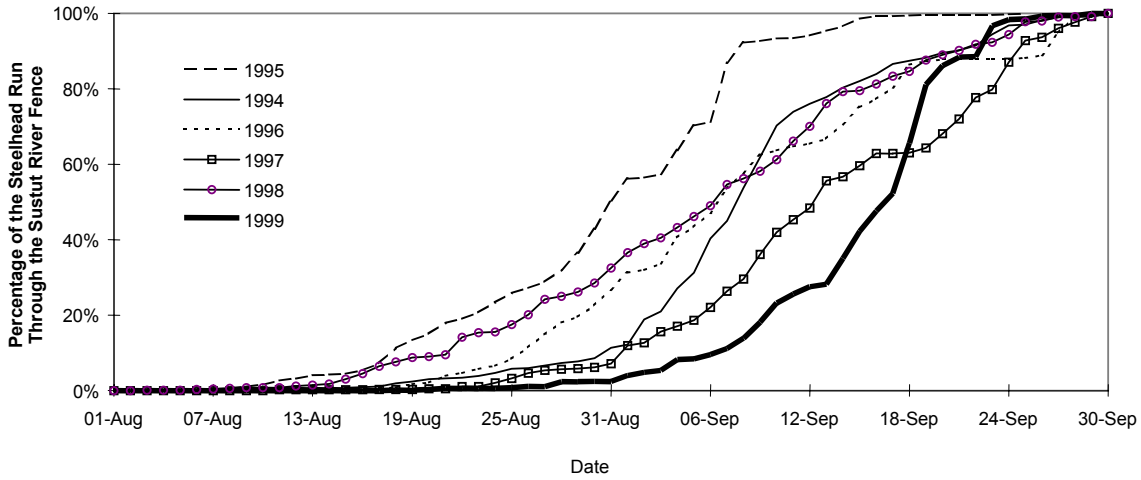

Figure 4. The 1994-1999 daily cumulative percentages of the upper Sustut River steelhead index.

Table 1. Dates when 50 percent of steelhead migrated through the upper and/or lower fences on the upper Sustut River.

	Date 50 percent of steelhead run had passed:	
Year	Upper Fence	Lower Fence
1993	Aug-28	Not Installed
1994	Sep-15	Aug-29
1995	Sep-10	Sep-08
1996	Not Installed	Sep-07
1997	Not Installed	Sep-13
1998	Not Installed	Sep-7
1999	Not Installed	Sep-17

Between July 29 and September 30, 690 chinook, 221 sockeye salmon (*O. nerka*), 30 coho salmon, 7 bull trout, 5 resident rainbow trout and 10 Rocky Mountain whitefish migrated through the fence (Appendix Tables 2, 3).

4.2 Steelhead Recaptures

Seventeen (17) previously tagged steelhead were recaptured in 1999 at the fence (Table 2). All of the recaptures were females that had been tagged in 1997 at the fence. One fish had migrated downstream of the fence after tagging in 1999 and subsequently passed the fence a second time. The tag for the last fish was lost while it was holding in the trap box. Fence personnel noted that the tag appeared to be the same type as two other recaptures from the same day

and that it had been tagged on the left side of the dorsal fin. This fish was most likely tagged at the fence between August 26- September 3, 1997 because this was the only period during 1997 that steelhead were tagged on the left side of the dorsal fin. Two tags from 1997 that were from Sustut bound fish were recovered in a First Nations fishery just upstream of the Kispiox- Skeena River confluence on September 1 and 2, 1999. There were no other data for these fish. Six hundred forty-nine steelhead were tagged at the fence in 1997, thus, a minimum of 2.5 percent of the 1997 upper Sustut River steelhead returned and were potential repeat spawners. The recaptured fish grew an average of 8.1-cm (range 5.0-11.3) from the date of initial tagging to the date of recapture. The first steelhead to arrive at the fence in 1999 was a recapture that was the first fish tagged in 1997 (Appendix Table 6).

Table 2. Steelhead recaptures not tagged in 1999 at the fence.

Recapture Data					Tagging Data			
Date (yymmdd)	Sex	Fork Length (cm)	Tag Colour	Tag Number	Date (yymmdd)	Location	Sex	Fork Length (cm)
99/08/18	f	82.6	Orange	N03192	97/08/09	Sustut Fence	f	74.0
99/09/01	f	79.0	Orange	N05906	97/09/21	Skeena River just upstream of Kispiox confluence	Data not available- fish were killed in a First Nations gillnet fishery	
99/09/02		72.0	Orange	N08060	97/09/11	Skeena River just upstream of Kispiox confluence		
99/09/09	f	82.5	Orange	N08062	97/09/21	Sustut Fence	f	71.5
99/09/09	f	82.0	Orange	N05720	97/09/01	Sustut Fence	f	77.0
99/09/11	f	78.5	Orange	N05976	97/09/13	Sustut Fence	f	69.0
99/09/18	f	80.1	Orange	N08165	97/09/24	Sustut Fence	f	71.0
99/09/18	f	82.1	Orange	N05793	97/09/09	Sustut Fence	f	75.0
99/09/18	f	78.5	Orange	N05959	97/09/13	Sustut Fence	f	72.0
99/09/19	f	86.0	Orange	N05802	97/09/07	Sustut Fence	f	77.0
99/09/19	f	84.3	Orange	N05860	97/09/09	Sustut Fence	f	73.0
99/09/19	f	77.0	Orange	N05704/5705	97/08/31	Sustut Fence	f	67.5
99/09/19	f	89.1	Orange	N04694	97/09/20	Sustut Fence	f	84.0
99/09/19	f	80.7	Orange				f	
99/09/20	f	85.7	Orange	N05914	97/09/11	Sustut Fence	f	78.0
99/09/20	f	83.5	Orange	N05992	97/09/13	Sustut Fence	f	74.5
99/09/23	f	79.5	Orange	N05910	97/09/11	Sustut Fence	f	73.0
99/09/23	f	79.0	Orange	N05724	97/09/02	Sustut Fence	f	72.0

4.3 Steelhead Migration and Physical Data

Maximum daily water temperature (from data logger) and upper staff gauge height were plotted with steelhead migration at the fence for 1999 (Figures 5, 6). Temperature increases appeared to coincide with increased migration through the fence. For most increases in water temperature, there was a corresponding increase in migration. The majority of migration occurred in the middle of September during a declining hydrographic regime during periods when stream temperature was increasing (Figure 6, Appendix Table 4). Daily minimum, mean and maximum water temperatures are presented in Appendix Figure 1.

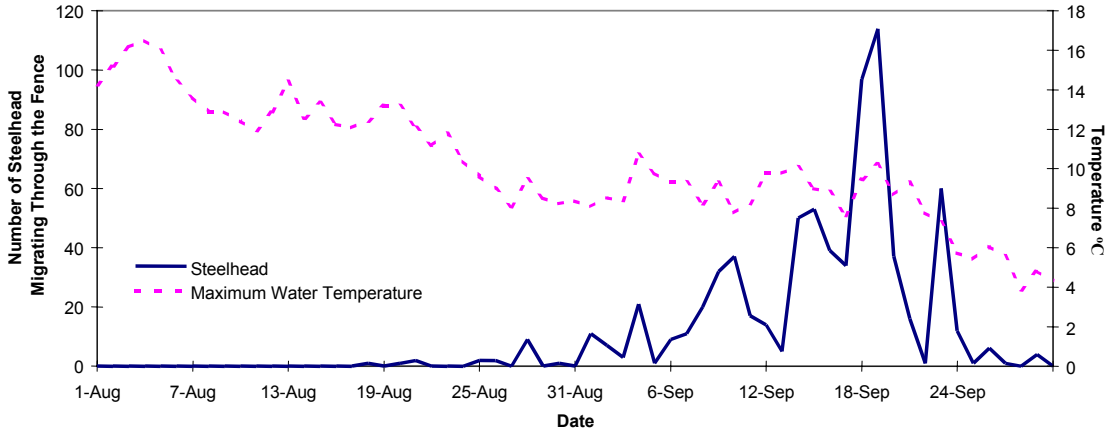

Figure 5. Daily maximum water temperatures and the number of steelhead migrating past the fence.

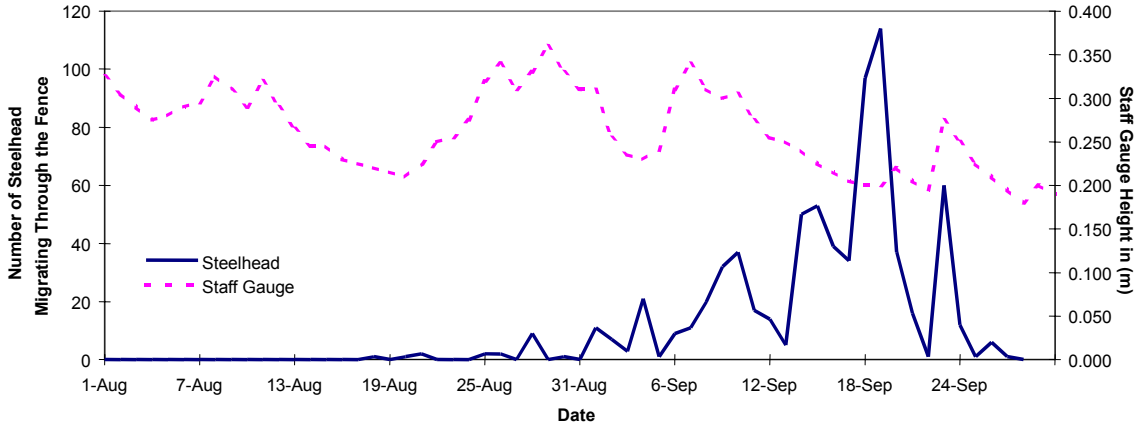

Figure 6. Daily lower staff gauge height and the number of steelhead migrating past the fence.

4.4 Steelhead Length Distributions by Sex

Of 731 steelhead measured at the fence, 277 (37.9 percent) were males and 454 (62.1 percent) were females. Thus, the ratio of female to male steelhead was 1.64:1. The mean fork-length of female steelhead was 75.6 cm whereas the mean fork-length of male steelhead was 84.8 cm. The average male steelhead was larger than the average female steelhead (Students t-test = 21.79 $P < 0.05$, Figure 7).

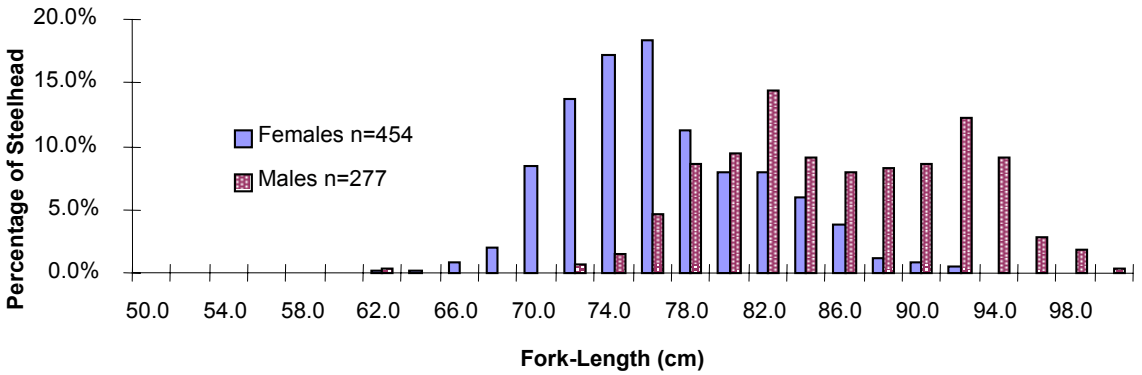

Figure 7. Percentage of male and female steelhead by 2 cm categories of fork-length.

4.5 Steelhead Gillnet Marks

Gillnet marks were present on 8.5 percent of the total steelhead tagged at the fence. The daily cumulative percentage of gillnet marked steelhead was plotted with the daily cumulative total steelhead (Figure 8). The percentages of gillnet marked steelhead remained steady for the duration of the enumeration period. The percentage of gillnet marked steelhead was pooled and plotted by statistical week (Figure 9). Statistical week definitions are outlined in Appendix Table 5. The percentage of gillnet marked fish remained relatively constant (6-10 percent) through statistical week 9-4 without a visible positive or negative trend.

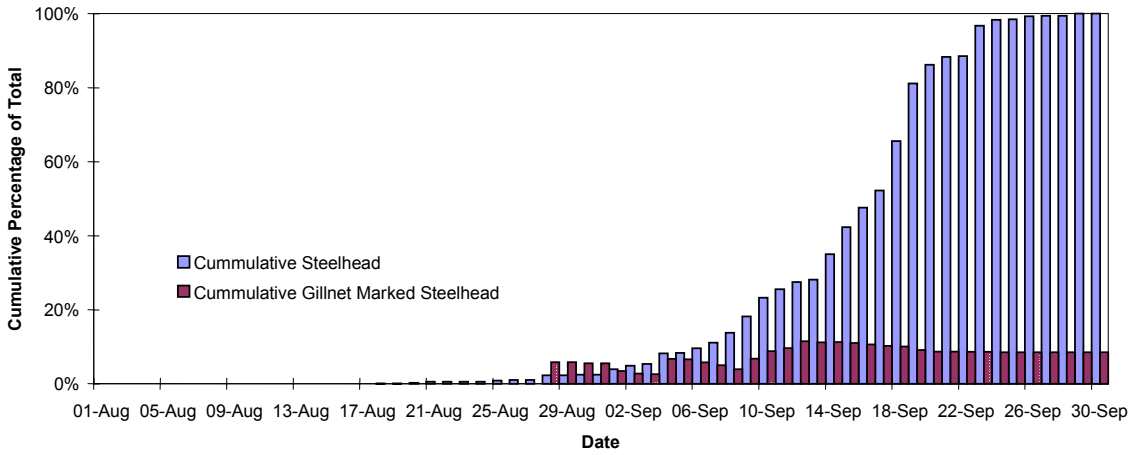

Figure 8. Daily cumulative total gillnet marked steelhead and daily cumulative total steelhead.

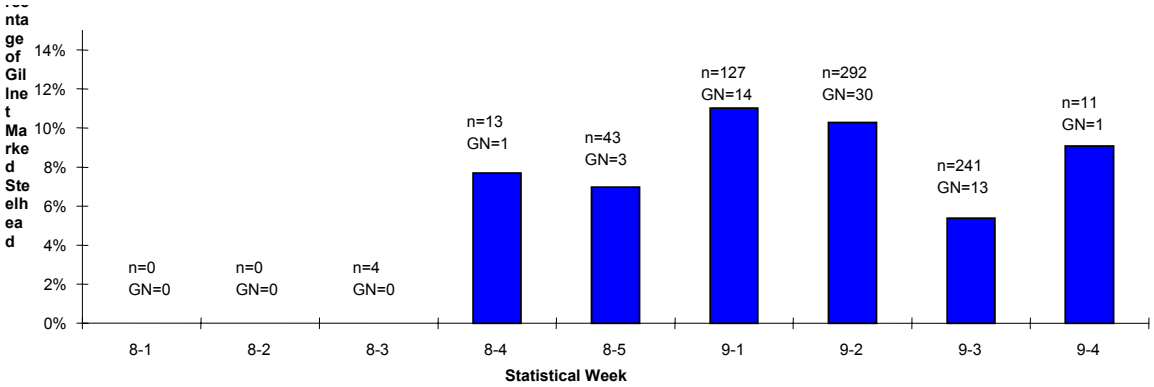

Figure 9. Percentage of gillnet marked steelhead by statistical week.

6.1 percent of male steelhead and 9.9 percent of female steelhead observed at the fence were gillnet marked. Gillnet marked males were similar in size to unmarked males (mean = 86.5 cm and 84.8 cm; Students t-test =1.97, P>0.05). The same was true for marked and unmarked females (mean = 75.4-cm and 75.6 cm); Students t-test=1.96, P>0.05).

4.6 Male and Female Steelhead Run Timing

The first female steelhead passed through the fence on August 17 and the first male steelhead passed the fence on August 20. The cumulative total percentage of both sexes remained similar throughout the enumeration period however there was a significant difference in the mean date for migration past the fence (Figure 10; Mann-Whitney U-Test W=189156, P<0.0001).

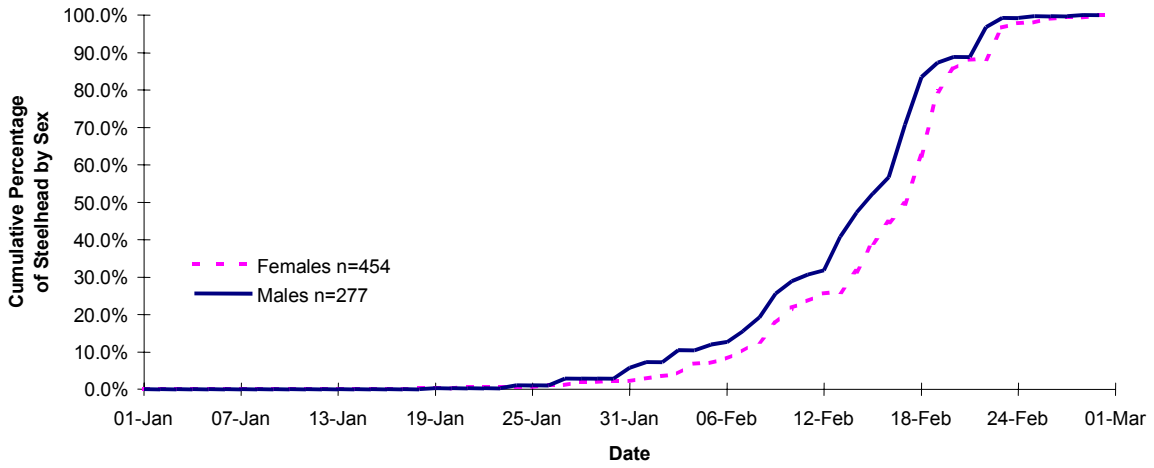

Figure 10. Cumulative percentages of total male and total female steelhead.

4.7 Upper Sustut River and Tyee Test Fishery Indices

After adding the 1999 datum, the Upper Sustut River steelhead index correlated with the August 10 cumulative Tyee steelhead index (Figure 11; Pearson Correlation R=0.82). Regression analysis of two indices was significant (ANOVA *F*=13.21, *P*=0.0108).

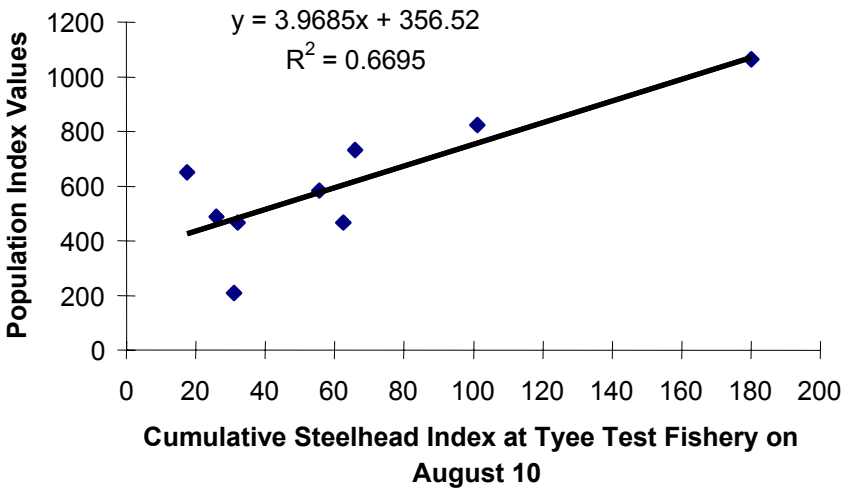

Figure 11. Linear relationship between the upper Sustut River steelhead population index and the cumulative steelhead index at Tyee test fishery on August 10.

5.0 Discussion

For 1999 the total estimated steelhead escapement was 896 fish. This value was the second highest recorded for all years of study. The 1999 upper Sustut River steelhead population index (731) was also the second highest recorded during the past eight years of fence enumeration. This year, commercial fishing pressure was again reduced for all returning salmonid species because of conservation concerns for Upper Skeena basin coho stocks, in addition to low sockeye returns. Coincidentally, a larger than average return of steelhead was observed at Sustut fence. Although, Parken *et al*. (1997) observed that commercial fishing effort (measured by gillnet boat days) was not a significant predictor of the percentage of gillnet marked steelhead at Sustut fence, commercial fishing does influence upstream escapement of steelhead; the percentage of gillnet marked steelhead tagged at the fence over the past eight years has ranged from two to twenty-three percent indicating that a substantial proportion of the run may encounter nets. Gillnet marks on steelhead observed this year remained low and there was little variation in the percentage of marked fish for the duration of the run.

The median migration date (September 17) for steelhead passing Sustut fence in 1999 was later than all other recorded years (Table 1). As in other years migration passed Sustut fence appeared to coincide with increases in discharge and water temperature. However, the water temperature and discharge remained relatively stable for the duration of the run and likely did not heavily influence the daily level of migration past the fence. As in past years, migration probably proceeded more as a function of the number of fish moving upstream under favorable conditions than as a function of fish being held up at the fence waiting for favorable conditions. Steelhead were not observed holding below the fence in large numbers for long periods of time.

Fifteen steelhead tagged at the fence in 1997 were recaptured in 1999. Assuming a zero tag loss rate, 2.3-percent of the 1997 were potential repeat spawners. The number of returning steelhead from the 1997 run is higher the range of values reported by Parken and Morten (1996), Parken *et al.* (1997), and Williamson (1998, 1999a). However, the number of repeat returning steelhead was less than the value of 6-percent reported by Saimoto (1995) for the 1994 run. Saimoto used scale annuli to distinguish repeat and double repeat spawners.

The handling mortality (0.3%) at the fence was within the low end of the range (0 - 4.3 percent) reported for previous years (Bustard 1993; Saimoto 1994; Saimoto 1995; Parken and Morten 1996; Parken *et al.* 1997, Williamson 1998, 1999a). In 1998 and 1999 fence personnel constructed a covered up-stream holding area for recovery and a low-head baffle to prevent stranding mortalities on the fence during low water periods (Williamson 1999b). Maximum, daily water temperatures also remained less than 16 C^{o} for the duration of fence operations.

6.0 Recommendations

1. The Upper Sustut River steelhead population should be enumerated in future years. Including the previous eight years, these data provide valuable measures for population trends and levels specifically for Upper Sustut River steelhead and generally for Skeena River steelhead. Sampling methods at Sustut fence should continue as recommended by Parken and Morten 1996. A reduction in the variability of sampling methods used will reduce the level of error between comparisons made from different years.

2. The installation of a low-head baffle on the up-stream edge of the fence on river left again functioned well in 1999. A large covered holding area that was constructed in 1998 and 1999 gave fish a better opportunity to recover from the stress of being handled. Both these structures reduced negative incidental impacts on fish that were handled at the fence. Technicians working at Sustut in the future should continue to evaluate how "fish friendly" their activities are in an effort to reduce negative impacts on fish being studied at the fence. Small changes in fence operation and structure can have substantial benefits.

3. Efforts to derive visual counts of fish abundance below the fence prior to fence removal should be continued. These counts provide the basis for estimating total escapement to the Upper Sustut.

4. Erosion at the fence site under the bank on the river right has increased dramatically since 1997. Steps should be taken to stabilize this bank before the suitability of the present fence location is compromised. As the river erodes towards river right, more of the discharge flows through the area to the right of the steel rail, exacerbating the problem. In 1999 there was a span of approximately 5 meters from the end of the steel rail to the bank on river right(Figure 3). An extension of the steel rail buried in the streambed and the construction of a permanent wall of krib logs on river right adjacent to the trap box could be used to prevent further bank erosion. Rip-rap should be used to armour the upstream end of the krib logs. Extending the steel rail would allow the retention of gravel and prevent further deepening of the channel that is developing on river right. Deflecting more flow away from river right may also reduce the numbers stranding mortalities on the fence panels during low water.

7.0 Acknowledgments

Jim Hansen and Matt Neufeld operated the fence and did an excellent job in providing well-organized, high quality data. Ron Tetreau, Dana Atagi and Sig Hatlevik helped with the installation and removal of the Sustut River fence. Ron Tetreau located recaptured steelhead in the TAGS database. Ron Tetreau and Mark Beere provided field relief for Jim and Matt. The Steffey family provided a friendly and warm place to visit for the field crew. Thanks to K. Dreidger (BCFS, Prince Rupert Forest Region) for loaning the travel trailer (Chateau de Sustut) used in the field. Dana Atagi provided editorial reviews and valuable comments for the final draft.

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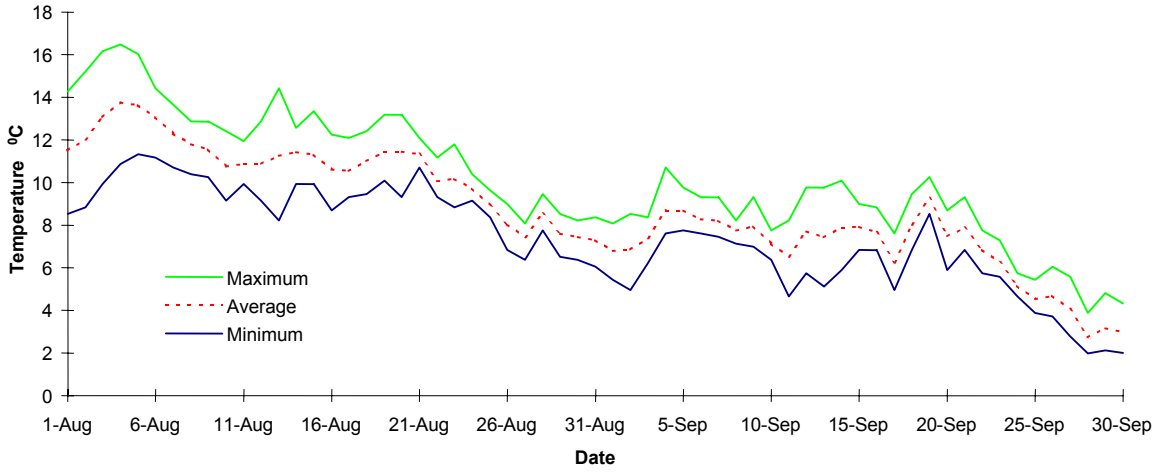
Appendix Figures



Appendix Figure 1. 1999 Daily minimum, average, and maximum temperatures at Sustut Fence.

Appendix Tables

Appendix Table 1. Steelhead handling mortalities 1998.

Date (yymmdd)	TAG	Date Tagged	Comments As Mortality
99/09/05	13042	99/09/04	died on panels overnight/clean
99/09/08	13016	99/08/28	stranding mortality overnight, fungus and fresh predator marks, tail and dorsal splits

Appendix Table 2. Daily totals of steelhead, rainbow trout, bull trout, and Rocky Mountain Whitefish at Sustut Fence, 1998.

	Steelhead		Rainbow Trout		Bull Trout		Whitefish	
Date (yymmdd)	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
99/07/30	0	0	0	0	1	1	0	0
99/07/31	0	0	0	0	0	1	1	1
99/08/01	0	0	0	0	0	1	0	1
99/08/02	0	0	0	0	0	1	0	1
99/08/03	0	0	0	0	0	1	0	1
99/08/04	0	0	0	0	0	1	0	1
99/08/05	0	0	0	0	0	1	0	1
99/08/06	0	0	1	1	0	1	0	1
99/08/07	0	0	0	1	0	1	1	2
99/08/08	0	0	0	1	0	1	0	2
99/08/09	0	0	0	1	0	1	0	2
99/08/10	0	0	0	1	0	1	0	2
99/08/11	0	0	0	1	0	1	0	2
99/08/12	0	0	0	1	0	1	0	2
99/08/13	0	0	0	1	0	1	0	2
99/08/14	0	0	0	1	0	1	0	2
99/08/15	0	0	0	1	0	1	1	3
99/08/16	0	0	0	1	0	1	0	3
99/08/17	0	0	0	1	0	1	0	3
99/08/18	1	1	0	1	0	1	1	4
99/08/19	0	1	0	1	0	1	0	4
99/08/20	1	2	0	1	0	1	1	5
99/08/21	2	4	0	1	0	1	0	5
99/08/22	0	4	0	1	1	2	1	6
99/08/23	0	4	0	1	1	3	1	7
99/08/24	0	4	1	2	0	3	0	7
99/08/25	2	6	0	2	0	3	0	7
99/08/26	2	8	0	2	0	3	0	7
99/08/27	0	8	0	2	0	3	0	7
99/08/28	9	17	0	2	0	3	0	7
99/08/29	0	17	0	2	0	3	0	7
99/08/30	1	18	0	2	0	3	0	7
99/08/31	0	18	0	2	0	3	0	7

	Steelhead		Rainbow Trout		Bull Trout		Whitefish	
Date (yymmdd)	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
99/09/01	11	29	0	2	0	3	0	7
99/09/02	7	36	0	2	0	3	0	7
99/09/03	3	39	0	2	0	3	0	7
99/09/04	21	60	0	2	0	3	0	7
99/09/05	1	61	0	2	0	3	0	7
99/09/06	9	70	0	2	0	3	0	7
99/09/07	11	81	0	2	0	3	0	7
99/09/08	20	101	0	2	0	3	1	8
99/09/09	32	133	2	4	0	3	0	8
99/09/10	37	170	0	4	0	3	0	8
99/09/11	17	187	0	4	0	3	0	8
99/09/12	14	201	0	4	0	3	0	8
99/09/13	5	206	0	4	1	4	1	9
99/09/14	50	256	0	4	0	4	1	10
99/09/15	53	309	0	4	1	5	0	10
99/09/16	39	348	0	4	0	5	0	10
99/09/17	34	382	0	4	0	5	0	10
99/09/18	97	479	0	4	1	6	0	10
99/09/19	114	593	0	4	0	6	0	10
99/09/20	37	630	0	4	0	6	0	10
99/09/21	16	646	0	4	0	6	0	10
99/09/22	1	647	0	4	0	6	0	10
99/09/23	60	707	0	4	0	6	0	10
99/09/24	12	719	0	4	0	6	0	10
99/09/25	1	720	0	4	0	6	0	10
99/09/26	6	726	0	4	0	6	0	10
99/09/27	1	727	0	4	1	7	0	10
99/09/28	0	727	0	4	0	7	0	10
99/09/29	4	731	1	5	0	7	0	10
99/09/30	0	731	0	5	0	7	0	10

Appendix Table 3. Daily totals of salmon at Sustut Fence, 1998.

Date (yymmdd)	Chinook		Sockeye		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
99/07/30	0	0	0	0	0	0
99/07/31	1	1	0	0	0	0
99/08/01	2	3	0	0	0	0
99/08/02	7	10	0	0	0	0
99/08/03	20	30	0	0	0	0
99/08/04	29	59	0	0	0	0
99/08/05	36	95	0	0	0	0
99/08/06	77	172	0	0	0	0
99/08/07	42	214	0	0	0	0
99/08/08	93	317	0	0	0	0
99/08/09	31	348	0	0	0	0
99/08/10	54	402	0	0	0	0
99/08/11	39	441	0	0	0	0
99/08/12	13	454	2	2	0	0
99/08/13	24	478	0	2	0	0
99/08/14	20	498	1	3	0	0
99/08/15	32	530	8	11	0	0
99/08/16	14	544	30	41	0	0
99/08/17	11	555	3	44	0	0
99/08/18	17	572	15	59	0	0
99/08/19	10	582	37	96	0	0
99/08/20	10	592	28	124	0	0
99/08/21	3	595	10	134	0	0
99/08/22	1	596	5	139	0	0
99/08/23	2	598	26	165	1	1
99/08/24	1	599	11	176	0	1
99/08/25	3	602	9	185	1	2
99/08/26	1	603	4	189	0	2
99/08/27	1	604	0	189	0	2
99/08/28	0	604	8	197	0	2
99/08/29	2	606	1	198	0	2
99/08/30	1	607	4	202	1	3
99/08/31	0	607	0	202	0	3
99/09/01	0	607	2	204	0	3
99/09/02	1	608	0	204	0	3
99/09/03	0	608	0	204	0	3
99/09/04	0	608	5	209	1	4
99/09/05	0	608	0	209	0	4
99/09/06	0	608	0	209	1	5
99/09/07	0	608	2	211	1	6
99/09/08	0	608	1	212	3	9
99/09/09	1	609	0	212	1	10
99/09/10	0	609	2	214	0	10
99/09/11	0	609	1	215	0	10
99/09/12	0	609	0	215	0	10

Date (yymmdd)	Chinook		Sockeye		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
99/09/13	0	609	0	215	0	10
99/09/14	0	609	1	216	1	11
99/09/15	0	609	0	216	0	11
99/09/16	0	609	0	216	0	11
99/09/17	0	609	0	216	2	13
99/09/18	0	609	0	216	0	13
99/09/19	0	609	0	216	3	16
99/09/20	0	609	1	217	2	18
99/09/21	0	609	1	218	4	22
99/09/22	0	609	0	218	3	25
99/09/23	0	609	3	221	3	28
99/09/24	0	609	0	221	0	28
99/09/25	0	609	0	221	0	28
99/09/26	0	609	0	221	1	29
99/09/27	0	609	0	221	1	30
99/09/28	0	609	0	221	0	30
99/09/29	0	609	0	221	0	30
99/09/30	0	609	0	221	0	30

Appendix Table 4. Upper staff gauge height, creek temperatures, and weather. Temperatures were recorded manually with a max-min thermometer.

Date (yymmdd)	Staff Gauge Height (m)		Water Temperature ^{O}C				Weather
	Time	Upper	Max	Min	Max	Min	
98/08/01	9:30	0.325	9		28	0	clear and sunny
	21:30	0.305	13				
98/08/02	9:45	0.305	9		29		clear and sunny
	22:45	0.290	13				
98/08/03	9:45	0.290	10.5		30		clear and sunny
	22:00	0.275	14				
98/08/04	9:45	0.275	7		33		clear & sunny (am), scattered clouds late afternoon and late p.m.
	22:15	0.270	15				
98/08/05	10:00	0.280	12		29		scattered clouds with lots of sunny periods
	22:00	0.275	15				
98/08/06	9:30	0.290	11		27		scattered clouds with sunny periods, thunder showers-13:30 - 14:00
	22:00	0.290	14				
98/08/07	10:00	0.295	11.5				mainly cloudy with thunder storms, few sunny periods
	21:00	0.300	13				
98/08/08	11:00	0.325	11		15		cloudy with periodic rain showers
	22:00	0.310	12				
98/08/09	10:15	0.310	11				cloudy with showers
	22:00	0.300	11				
98/08/10	10:30	0.290	9.5				cloudy with showers (am) heavy rain @ 20:30
	20:45	0.275	11.5				
98/08/11	9:15	0.320	11				cloudy with sunny periods, cool
	21:30	0.305	11				
98/08/12	9:00	0.290	9.5				scattered clouds with sunny periods, clear skies late p.m.

Date (yymmdd)	Staff Gauge Height (m) Time	Upper	Water Temperature ^{O}C Max	Min	Max	Min	Weather
	21:30	0.270	12				
98/08/13	10:00	0.265	9				mainly sunny/ clear
	21:30	0.250	13				
98/08/14	9:30	0.245	10				cloudy (rain 19:00-20:30)
	21:30	0.245	12				
98/08/15	9:30	0.245	10				sunny with cloudy periods, clear in p.m.
	22:00	0.230	11				
98/08/16	10:00	0.230	9				clouds and rain
	21:30	0.225	11				
98/08/17	9:00	0.225	9.5		20		cloudy with rain in late p.m.
	21:15	0.225	11.5				
98/08/18	9:30	0.220	11.5	9.5	20.5	5	clouds with periodic showers
	21:30	0.215					
98/08/19	9:30	0.215	13	10	23	5.5	clouds, showers, sunny periods
	21:30	0.210					
98/08/20	9:30	0.210	13	10	13	2.5	cloudy with periodic showers
	21:30	0.210					
98/08/21	10:30	0.225	12.5	10	12.5	7	clouds, rain with strong southerly winds
	21:00	0.250					
98/08/22	10:15	0.250	11	10	11	6	clouds and rain
	21:00	0.245					
98/08/23	9:30	0.255	11.5	9.5	11.5	6	cloud, rain with a sunny break
	21:00	0.260					
98/08/24	10:00	0.275	10.5	9.5	10.5	6	raining and cloudy
	20:35	0.280					
98/08/25	10:00	0.320	10	8.1	10	4.5	raining and cloudy
	20:30	0.340					
98/08/26	7:30	0.340	9	7.5	9	3	rising, rain and cloud
	20:15	0.330					
98/08/27	10:00	0.310	8.5	6	8.5	2	rising slowly rain and cloud
	20:15	0.310					
98/08/28	9:00	0.330	9.5		15	9	rain, cloud, wind
	20:00	0.350					
98/08/29	7:15	0.360			11	1.5	cloudy with sunny periods
	14:00	0.340					
98/08/30	8:00	0.330	9	6	8.5	3	sunny periods
	18:00	0.310					
98/08/31	8:00	0.310	9	6	14	-3.5	sunny/ cloudy periods
	20:00	0.290					
98/09/01	8:00	0.310	10	5	14	-3.5	sunny/cloudy
	21:00	0.265					
98/09/02	9:00	0.255	8	5	12	-5	cloudy with sunny periods
	20:30	0.245					
98/09/03	10:00	0.235	8	6	12	-2	clouds, with evening showers
	20:30	0.230					
98/09/04	10:30	0.230	10	7.5	16	6	cloudy with afternoon sun
	21:30	0.230					
98/09/05	10:15	0.240	9	8	14.5	4.5	clouds/ rain
	20:30	0.250					
98/09/06	9:30	0.310	9	7.5	13	4	clouds/ rain
	20:30	0.335					
98/09/07	9:00	0.340	8.5	7	12	4	mainly cloudy with some rain
	20:15	0.325					
98/09/08	9:15	0.310	8.5	7.5	9	4	mainly cloudy with some rain
	20:30	0.300					

Date (yymmdd)	Staff Gauge Height (m) Time	Upper	Water Temperature ^{O}C Max	Min	Max	Min	Weather
98/09/09	8:30	0.300	9	7	11	4	mainly cloudy, few sunny periods, showers
	20:30	0.315					
98/09/10	9:00	0.305	8.5	7	13	-1	cloudy with evening sun
	20:30	0.290					
98/09/11	8:30	0.275	7.5	5	13	-4.5	sunny with afternoon cloudy periods
	20:30	0.275					
98/09/12	8:45	0.255	7	5.5	22	-2	sunny and warm
	20:30	0.255					
98/09/13	8:30	0.250	9.5	5	25.5	-5.5	sunny/ clear skies
	20:15	0.245					
98/09/14	8:30	0.240	9	6	22	-3.5	sunny clear
	19:30	0.230					
98/09/15	8:00	.225.	9	7	14	0	cloudy with some sun
	20:30	0.225					
98/09/16	9:00	0.215	8	6.5	16	-1	cloudy with some sun
	20:00	0.215					
98/09/17	8:30	0.205	8	5	13	-5	mainly cloudy, few sunny periods, afternoon, showers late p.m.
	20:30	0.205					
98/09/18	8:30	0.200	9	6	15	6	mainly cloudy a few sunny breaks
	21:00	0.200					
98/09/19	9:30	0.200	10	9.5	18	6	overcast, clouds and afternoon sun, heavy rains between 14:30- 18:30/ clear p.m.
	20:15	0.205					
98/09/20	8:30	0.220	9	6	14	-1	sunny with high clouds in evening
	20:00	0.215					
98/09/21	8:30	0.205	9	6.5	17	0	scattered cloud, clear late p.m.
	20:30	0.200					
98/09/22	9:30	0.195	8	5.5	10	-2	rain all day!
	19:30	0.205					
98/09/23	9:00	0.275	7	4.5	7	1	awoke to sprinkles of white (hail and sleet) mainly cloudy, white stuff again late p.m.
	20:00	0.270					
98/09/24	10:00	0.250	5.5	4.5	6	-2	some snow mainly cloudy
	19:30	0.235					
98/09/25	9:30	0.225	5.5	4.5	6.5	-3.5	minor white sprinkles, overcast with occasional sunny moment
	19:30	0.215					
98/09/26	9:15	0.210	5	4.5	8	-1.5	cloudy with sunny periods
	20:00	0.205					
98/09/27	9:30	0.195	4.5	2.5	10	-7	100% clear skies
	19:45	0.195					
98/09/28	9:00	0.180	4	1	1	-1	snow all day 6 in by evening
	20:00	0.195					
98/09/29	9:00	0.200	4	1.5	8	-3	scattered cloud with sunny periods
	19:30	0.190					
98/09/30	10:00	0.190					overcast

Appendix Table 5. Definition of statistical weeks.

Statistical Week	Corresponding Dates
8-1	August 1 to August 7
8-2	August 8 to August 14
8-3	August 15 to August 21
8-4	August 22 to August 28
8-5	August 29 to September 4
9-1	September 05 to September 11
9-2	September 12 to September 18
9-3	September 19 to September 25
9-4	September 26 to October 2

Appendix Table 6. Steelhead tagging data.

Date (yymmdd)	Time	Sex	Fork Length (cm)	Tag Colour	Tag Letter	Tag #	DNA/ Scale Sample	Gill Net Marks	Comments
99/08/18	20:00	f	82.6	Orange	N	3192			Tag Recapture, bright, prev. DNA sample
99/08/20	18:00	m	80.2	Yellow		13001	1		bright, clean
99/08/21	17:00	f	87.5	Yellow		13002			minor predator scar, bright
99/08/21	18:50	f	71.0	Yellow		13004			bright, clean
99/08/25	16:00	m	93.5	Yellow		13003	2		old predator scar
99/08/25	16:00	m	78.0	Yellow		13006	5		clean
99/08/26	17:30	f	66.0	Yellow		13007			clean, scales taken
99/08/26	17:30	f	74.0	Yellow		13008			clean, scales taken
99/08/28	17:15	m	93.5	Yellow		13009	3		nose scar
99/08/28	17:15	m	84.0	Yellow		13010			predator scars (old) scales taken
99/08/28	17:15	m	77.0	Yellow		13011			predator scars (old) scales taken
99/08/28	17:15	f	73.5	Yellow		13012		Y	scales taken
99/08/28	17:15	m	90.5	Yellow		13014			scales taken
99/08/28	17:15	f	80.5	Yellow		13015			predator scars, scales taken
99/08/28	17:15	m	92.0	Yellow		13016	14		clean (fence mort 99/09/08)
99/08/28	17:15	f	76.0	Yellow		13017			scales taken
99/08/28	17:15	f	75.5	Yellow		13018			predator scars, scales taken
99/08/30	17:30	f	70.0	Yellow		13005	4		predator scars
99/09/01	17:00	m	89.0	Yellow		13019			old ventral predator scars
99/09/01	17:00	m	91.3	Yellow		13020			bright, clean
99/09/01	17:00	f	74.0	Yellow		13021			minor scrapes
99/09/01	17:00	f	69.0	Yellow		13022			bright, clean
99/09/01	17:00	m	90.5	Yellow		13023			left ventral predator scar, red
99/09/01	17:00	m	90.0	Yellow		13024			red, no marks
99/09/01	17:00	m	81.4	Yellow		13025			old lateral scars
99/09/01	17:00	m	78.5	Yellow		13026			dark, no marks
99/09/01	17:00	f	77.5	Yellow		13027			piece missing lower tail
99/09/01	17:00	m	77.5	Yellow		13028			bright, clean
99/09/01	17:00	m	88.0	Yellow		13029			minor head scrapes
99/09/02	16:30	f	70.0	Yellow		13031			bright, split left pectoral
99/09/02	16:30	m	97.0	Yellow		13032			split anal fin
99/09/02	16:30	m	80.8	Yellow		13033			predator scar- right side
99/09/02	16:30	f	72.3	Yellow		13034			bright, clean
99/09/02	16:30	f	90.1	Yellow		13035			bright, clean
99/09/02	16:30	m	89.5	Yellow		13036			red, no marks
99/09/02	16:30	m	84.1	Yellow		13037			dark, no marks
99/09/03	19:45	f	77.3	Yellow		13038	6		bright, clean
99/09/03	19:45	f	67.0	Yellow		13039			bright, clean

Date (yymmdd)	Time	Sex	Fork Length (cm)	Tag Colour	Tag Letter	#	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/03	19:45	f	75.0	Yellow		13040			old pred scar both sides
99/09/04	17:30	m	91.8	Yellow		13041			dark, minor scrapes
99/09/04	17:30	f	88.1	Yellow		13042	7		bright, clean, fence mort 99/09/05
99/09/04	17:30	m	82.0	Yellow		13043		Y	split tail, tag bleeder
99/09/04	17:30	f	74.6	Yellow		13044			bright, clean
99/09/04	17:30	m	80.2	Yellow		13045			minor operc. scrapes bright
99/09/04	17:30	m	77.8	Yellow		13046			red, no marks
99/09/04	17:30	m	79.2	Yellow		13047			red, no marks
99/09/04	17:30	f	75.6	Yellow		13048			bright, clean
99/09/04	17:30	f	75.9	Yellow		13049			bright, clean
99/09/04	17:30	m	81.5	Yellow		13050			bright, clean
99/09/04	17:30	f	77.1	Yellow		13051		Y	hook scar, split dorsal fin and tail
99/09/04	17:30	m	81.0	Yellow		13052	8		bright, old pred scar
99/09/04	17:30	f	81.3	Yellow		13053			bright, minor head scrapes
99/09/04	17:30	f	72.0	Yellow		13054			bright, minor head scrapes
99/09/04	17:30	f	74.9	Yellow		13055			old pred scar right side
99/09/04	17:30	f	79.5	Yellow		13056			bright
99/09/04	17:30	f	72.2	Yellow		13057			bright
99/09/04	17:30	f	70.4	Yellow		13058			dorsal fin wear, minor head side and head scrapes
99/09/04	17:30	m	80.0	Yellow		13059			split right pectoral
99/09/04	18:40	f	69.5	Yellow		13060		y	bright
99/09/04	18:40	m	78.4	Yellow		13061			hook scar
99/09/05	18:45	f	74.6	Yellow		13062			bright, minor abrasion
99/09/06	9:30	f	74.1	Yellow		13063			bright, top of tail gone
99/09/06	9:30	m	88.7	Yellow		13064			no marks
99/09/06	9:30	m	89.0	Yellow		13065			dark
99/09/06	16:30	f	83.0	Yellow		13066	9		
99/09/06	18:30	f	70.7	Yellow		13067			bright
99/09/06	18:30	m	82.7	Yellow		13068			minor head scrape
99/09/06	18:30	f	74.7	Yellow		13069			bright, old predator scars
99/09/06	18:30	m	85.1	Yellow		13070			old predator scars
99/09/06	20:30	f	74.4	Yellow		13071			top of tail gone, bright
99/09/07	9:00	f	68.4	Yellow		13072	10		bright, clean
99/09/07	9:00	f	76.5	Yellow		13073	11		bright, clean
99/09/07	11:20	m	86.2	Yellow		13074			no marks
99/09/07	17:00	f	76.8	Yellow		13075	12		bright, abrasions left side
99/09/07	17:00	f	72.0	Yellow		13076	13		bright, clean
99/09/07	20:15	f	80.1	Yellow		13077			bright, old predator scar left side
99/09/07	20:15	m	81.2	Yellow		13078			dark, no marks
99/09/07	20:15	f	85.5	Yellow		13079			fresh wound lower tail, split
99/09/07	20:15	f	81.0	Yellow		13080			bright, clean
99/09/07	20:15	f	82.0	Yellow		13081			bright, clean
99/09/07	20:15	f	67.7	Yellow		13082			bright, clean
99/09/08	17:30	m	96.2	Yellow		13083	15		dark, operculum scrapes
99/09/08	17:30	f	66.4	Yellow		13084	16		bright, clean
99/09/08	17:30	f	78.2	Yellow		13085			bright, head scrapes, released d/s
99/09/08	17:30	m	87.0	Yellow		13086			red, no marks
99/09/08	17:30	f	79.5	Yellow		13087			bright, clean
99/09/08	17:30	f	79.6	Yellow		13088			bright, minor lateral abrasions
99/09/08	17:30	f	70.3	Yellow		13090			bright, head abrasions
99/09/08	17:30	m	87.7	Yellow		13091			dark, lower caudal wear
99/09/08	17:30	m	81.3	Yellow		13092			head scrapes
99/09/08	17:30	f	70.7	Yellow		13093			bright, minor lateral abrasions
99/09/08	17:30	f	79.8	Yellow		13094			bright, clean
99/09/08	17:30	f	73.0	Yellow		13095			bright, clean
99/09/08	17:30	f	81.1	Yellow		13097			bright. Dorsal fin wear

Date (yymmdd)	Time	Sex	Fork Length (cm)	Colour	Tag Letter	#	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/08	17:30	m	78.0	Yellow		13098			old dorsal scar
99/09/08	17:30	f	74.1	Yellow		13100			bright, clean
99/09/08	17:30	f	78.2	Yellow		13101			top caudal and pectoral fin wear
99/09/08	17:30	m	79.9	Yellow		13102			dark, minor head scrapes
99/09/08	17:30	m	74.1	Yellow		13103			bright, clean
99/09/08	17:30	m	84.6	Yellow		13104			old predator scars
99/09/08	17:30	f	68.1	Yellow		13105			no marks
99/09/09	18:30	f	72.0	Yellow		13106	17		bright, clean
99/09/09	18:30	m	90.5	Yellow		13107	18		red, old predator scar left side
99/09/09	18:30	m	84.1	Yellow		13108	19		dark, no marks
99/09/09	18:30	f	84.2	Yellow		13109	20		bright, minor abrasions left side
99/09/09	18:30	f	82.5	Orange	N	8062		y	bright, RECAP
99/09/09	18:30	f	82.0	Orange	N	5720		y	bright, RECAP
99/09/09	18:30	f	74.4	Yellow		13110			bright, old dorsal scar
99/09/09	18:30	f	74.0	Yellow		13111			bright, minor abrasions both sides
99/09/09	18:30	m	89.9	Yellow		13112			dark, old predator scar left side
99/09/09	18:30	f	72.5	Yellow		13113			bright, clean
99/09/09	18:30	f	68.5	Yellow		13114			bright, clean
99/09/09	18:30	f	76.5	Yellow		13115		y	dime size abrasion top of head
99/09/09	18:30	m	90.5	Yellow		13116			dark, red
99/09/09	18:30	m	92.8	Yellow		13117			dark, minor head abrasions
99/09/09	18:30	m	93.0	Yellow		13118			dark, minor head abrasions
99/09/09	18:30	m	91.5	Yellow		13119			dark, minor operc. scrapes
99/09/09	18:30	m	84.2	Yellow		13120			bright, clean
99/09/09	18:30	f	74.8	Yellow		13121			bright, old predator scars both sides
99/09/09	18:30	f	74.0	Yellow		13122			predator scar right side
99/09/09	18:30	f	84.3	Yellow		13123			right operc. damage, hook scar
99/09/09	18:30	f	74.7	Yellow		13124			bright, scars right side
99/09/09	18:30	f	72.0	Yellow		13125			abra. left side near adipose
99/09/09	18:30	m	79.0	Yellow		13126			dark, small stubby adipose
99/09/09	18:30	f	74.0	Yellow		13127			bright, old scars both sides
99/09/09	18:30	f	87.0	Yellow		13128			bright, split left pectoral
99/09/09	18:30	f	72.0	Yellow		13129			bright, minor abrasions left side
99/09/09	18:30	f	71.8	Yellow		13130			minor head abr. pred. scar right
99/09/09	18:30	f	75.2	Yellow		13131		Y	bright, top of tail wound
99/09/09	18:30	f	61.9	Yellow		13132		Y	top of tail wound
99/09/09	18:30	m	92.5	Yellow		13133			red, old predator scars
99/09/09	18:30	f	82.0	Yellow		13134			bright, clean
99/09/09	20:30	f	69.5	Yellow		13135			bright, clean
99/09/10	13:30	m	87.3	Yellow		13136	21		dark, split dorsal
99/09/10	18:15	m	79.9	Yellow		13138	22		bright, clean
99/09/10	18:15	m	78.1	Yellow		13139	23	Y	
99/09/10	18:15	m	91.3	Yellow		13140	24		r
99/09/10	18:15	f	68.2	Yellow		13141	25		bright, clean
99/09/10	18:15	f	83.5	Yellow		13142	26	Y	multiple abrasions
99/09/10	18:15	m	82.1	Yellow		13143			red, minor head abrasions
99/09/10	18:15	f	75.0	Yellow		13144			no marks
99/09/10	18:15	m	94.6	Yellow		13145		Y	split dorsal, abrasions with fungus
99/09/10	18:15	m	77.3	Yellow		13146			split dorsal fin
99/09/10	18:15	f	75.5	Yellow		13147			bright, split dorsal
99/09/10	18:15	m	83.8	Yellow		13148		Y	split dorsal
99/09/10	18:15	m	80.4	Yellow		13149			bright, no marks
99/09/10	18:15	f	81.3	Yellow		13150			lower jaw abrasions
99/09/10	18:15	m	75.0	Yellow		13151			split dorsal with fungus
99/09/10	18:15	f	73.1	Yellow		13152			bright, clean
99/09/10	19:10	f	77.7	Yellow		13153			bright, clean

Date (yymmdd)	Time	Sex	Fork Length (cm)	Colour	Tag Letter	#	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/10	19:10	m	87.0	Yellow		13154			red, minor operc. abrasions
99/09/10	19:10	m	86.8	Yellow		13155			operc. scrapes right side
99/09/10	19:10	m	89.0	Yellow		13156			old predator scars
99/09/10	19:10	f	76.0	Yellow		13157		Y	caudal split
99/09/10	19:10	m	77.1	Yellow		13158			no marks
99/09/10	19:10	f	75.7	Yellow		13159			minor abrasions
99/09/10	19:10	f	74.1	Yellow		13160			bright, clean
99/09/10	19:10	f	76.2	Yellow		13161			bright, head scrapes
99/09/10	19:10	m	78.9	Yellow		13162			bright, clean
99/09/10	19:10	m	79.2	Yellow		13163			no marks
99/09/10	19:10	f	79.2	Yellow		13164			head scrapes, right pelvic abra.
99/09/10	19:10	m	84.2	Yellow		13165			split dorsal
99/09/10	19:10	f	79.9	Yellow		13166			minor abrasions
99/09/10	19:10	m	79.5	Yellow		13167			dark
99/09/10	19:10	f	77.9	Yellow		13168			bright, split dorsal
99/09/10	19:10	f	69.5	Yellow		13169		Y	split dorsal
99/09/10	19:10	f	73.1	Yellow		13170			bright, minor abrasions both sides
99/09/10	19:40	f	76.1	Yellow		13171			multiple head and oper. abrasions
99/09/10	19:40	f	71.5	Yellow		13172			operculum scrapes
99/09/10	20:00	f	79.4	Yellow		13173			old predator scars
99/09/11	18:30	m	95.3	Yellow		13174	27	Y	nose wound with fungus, multiple fin splits and abrasions
99/09/11	18:30	f	69.0	Yellow		13175	28	Y	head and body abrasions
99/09/11	18:30	m	86.0	Yellow		13176	29		minor abrasions left side
99/09/11	18:30	m	91.0	Yellow		13177	30	Y	multiple splits and abrasions
99/09/11	18:30	f	72.4	Yellow		13178	31		bright, clean
99/09/11	18:30	f	78.5	Orange	N	5976			bright, split dorsal
99/09/11	18:30	m	83.9	Yellow		13179			no marks
99/09/11	18:30	m	90.6	Yellow		13180			minor head scrapes, old pred. scar
99/09/11	18:30	m	79.9	Yellow		13181			bright, old predator scar right
99/09/11	18:30	f	82.8	Yellow		13182			dark, no marks
99/09/11	18:30	f	79.0	Yellow		13183			bright, clean
99/09/11	18:30	f	76.1	Yellow		13184			old predator scar left side
99/09/11	18:30	f	78.3	Yellow		13185			split dorsal, head abrasions
99/09/11	18:30	f	80.0	Yellow		13186			lower caudal wear, abrasions both sides
99/09/11	18:30	m	87.5	Yellow		13187			red, head and operculum scrapes
99/09/11	18:30	m	90.7	Yellow		13188			red, no spots
99/09/11	18:30	m	88.0	Yellow		13189			red, minor abrasions
99/09/12	18:45	m	90.0	Yellow		13190	32		tag bleeder, dark
99/09/12	18:45	m	92.5	Yellow		13192	33		dark, no marks
99/09/12	18:45	f	69.1	Yellow		13193	34		bright, clean
99/09/12	18:45	f	72.3	Yellow		13194	35	Y	split caudal
99/09/12	18:45	m	81.8	Yellow		13195	36		nose and head abrasions
99/09/12	18:45	m	92.8	Yellow		13196		Y	dark
99/09/12	18:45	f	76.5	Yellow		13197		Y	split dorsal fin, multiple abrasions
99/09/12	18:45	f	68.3	Yellow		13198			bright, clean
99/09/12	18:45	f	71.0	Yellow		13199		Y	multiple abrasions
99/09/12	18:45	m	80.6	Yellow		13200			bright, clean
99/09/12	18:45	f	73.0	Yellow		13201			bright, minor operculum scrapes
99/09/12	18:45	f	75.8	Yellow		13202			bright, minor head abrasions
99/09/12	18:45	f	73.8	Yellow		13203		Y	abrasions and split fins
99/09/12	18:45	f	72.8	Yellow		13204			bright, clean
99/09/13	19:00	m	88.3	Yellow		13205	37		red, no marks
99/09/13	19:00	m	88.7	Yellow		13206	38		red, minor head abrasions
99/09/13	19:00	f	76.2	Yellow		13207	39		bright, minor abrasions both sides

Date (yymmdd)	Time	Sex	Fork Length (cm)	Tag Colour	Tag Letter	#	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/13	19:00	f	74.3	Yellow		13208	40		minor head and operculum abrasions
99/09/13	19:00	m	75.8	Yellow		13209	41		red, no marks
99/09/14	16:30	m	87.7	Yellow		13210	42	Y	red, multiple tail splits and abrasions
99/09/14	16:30	f	73.0	Yellow		13211	43		bright, head puncture wound
99/09/14	16:30	m	92.1	Yellow		13212	44		dark, deformed caudal
99/09/14	16:30	m	86.9	Yellow		13213	45		bright, clean
99/09/14	16:30	f	73.4	Yellow		13214	46		bright, clean
99/09/14	16:30	m	84.0	Yellow		13215			no marks
99/09/14	16:30	m	91.1	Yellow		13216			dark, large wound right side
99/09/14	16:30	m	93.2	Yellow		13217			head and dorsal fin abrasions
99/09/14	16:30	f	74.0	Yellow		13218			bright, clean
99/09/14	16:30	f	75.2	Yellow		13219			bright, clean
99/09/14	16:30	m	75.5	Yellow		13220			ripped dorsal with fungus
99/09/14	16:30	f	76.8	Yellow		13221			old predator scar on right side
99/09/14	16:30	m	95.1	Yellow		13222			red, no marks
99/09/14	16:30	m	83.7	Yellow		13223			no marks
99/09/14	16:30	f	81.0	Yellow		13224		Y	abrasions
99/09/14	16:30	f	80.0	Yellow		13225			no marks
99/09/14	16:30	f	78.1	Yellow		13226			bright minor head abrasions
99/09/14	16:30	m	90.4	Yellow		13227			right operculum scrapes
99/09/14	16:30	m	78.1	Yellow		13228			head and operculum scrapes, dorsal fin abrasions
99/09/14	16:30	f	76.8	Yellow		13229			bright, minor head abrasions
99/09/14	16:30	f	79.4	Yellow		13230		Y	dorsal fin abrasions split tail
99/09/14	16:30	m	77.1	Yellow		13231			deformed dorsal, old predator scar right side
99/09/14	16:30	m	76.1	Yellow		13232			no
99/09/14	16:30	f	84.6	Yellow		13233			split dorsal
99/09/14	16:30	f	75.0	Yellow		13234			bright, minor abrasion right side
99/09/14	16:30	m	82.2	Yellow		13235			no marks, deformed lower tail
99/09/14	16:30	m	79.5	Yellow		13236			no marks
99/09/14	16:30	m	81.1	Yellow		13237			tag bleeder
99/09/14	16:30	m	76.2	Yellow		13238			red, few spots
99/09/14	16:30	f	71.4	Yellow		13239			bright, minor abrasions right side
99/09/14	16:30	m	79.9	Yellow		13240			abrasions both sides
99/09/14	16:30	f	83.2	Yellow		13241			no marks
99/09/14	16:30	f	73.0	Yellow		13242			split dorsal, abrasions right side
99/09/14	16:30	f	69.8	Yellow		13243			abrasions both sides, split left pectoral
99/09/14	19:30	m	89.1	Yellow		13244			caudal split, head and pelvic abrasions
99/09/14	19:30	f	80.0	Yellow		13245			bright, minor abrasions right side
99/09/14	19:30	f	76.2	Yellow		13246			bright, minor abrasions right side
99/09/14	19:30	m	75.3	Yellow		13247			head abrasions, old scar left side
99/09/14	19:30	m	90.3	Yellow		13248			clean
99/09/14	19:30	f	80.0	Yellow		13249			bright
99/09/14	19:30	m	91.1	Yellow		13250			split caudal & operculum, abrasions right side
99/09/14	19:30	f	79.4	Yellow		13251		Y	dark
99/09/14	19:30	f	78.0	Yellow		13252		Y	head abrasions, ripped right operculum
99/09/14	19:30	f	72.3	Yellow		13253			bright, clean
99/09/14	19:30	f	75.8	Yellow		13254			minor operculum scrapes
99/09/14	19:30	m	88.2	Yellow		13255			dark, no marks
99/09/14	19:30	f	67.3	Yellow		13256			bright, clean

Date (yymmdd)	Time	Sex	Fork Length (cm)	Tag Colour	Tag Letter	Tag #	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/14	19:30	m	84.9	Yellow		13257			dark, no marks
99/09/14	19:30	m	81.1	Yellow		13258			dark, no marks
99/09/14	19:30	f	74.1	Yellow		13259		Y	bright, abrasions of right side
99/09/15	7:45	f	72.2	Yellow		13260	47		minor abrasions on head and left side
99/09/15	16:00	m	86.4	Yellow		13261	48		red, right pectoral fin abrasions with fungus
99/09/15	16:00	m	96.0	Yellow		13262	49		old predator scar on right side, lower tail split with wound
99/09/15	16:00	m	85.9	Yellow		13263	50		bright, minor abrasions
99/09/15	16:00	f	74.0	Yellow		13264	51		bright, dorsal fin abrasions
99/09/15	16:00	m	80.6	Yellow		13265		Y	dorsal puncture wound, multiple abrasions and split fins
99/09/15	16:00	f	70.0	Yellow		13266			bright, clean
99/09/15	16:00	f	76.3	Yellow		13267			bright, clean
99/09/15	16:00	m	90.0	Yellow		13268			no marks
99/09/15	16:00	f	80.3	Yellow		13269			minor abrasion right side
99/09/15	16:00	f	76.0	Yellow		13270			minor abrasions right side
99/09/15	16:00	m	78.8	Yellow		13271			abrasions left operculum
99/09/15	16:00	f	73.9	Yellow		13272			bright, minor head abrasion
99/09/15	16:00	f	72.5	Yellow		13273		Y	split dorsal, multiple abrasions
99/09/15	16:00	f	74.2	Yellow		13274			10 cm. cut left side
99/09/15	16:00	f	77.0	Yellow		13275		Y	abrasions, right operculum cut
99/09/15	16:00	f	84.9	Yellow		13276			bright, clean
99/09/15	16:00	f	80.6	Yellow		13277			15 cm, gash left side (d/s migrant)
99/09/15	16:00	f	72.0	Yellow		13278			bright, clean
99/09/15	16:00	m	91.0	Yellow		13279			minor head abrasions, no spots
99/09/15	16:00	f	81.9	Yellow		13280			bright, clean
99/09/15	16:00	f	75.4	Yellow		13281			minor abrasions
99/09/15	16:00	m	77.4	Yellow		13282			abrasion left side
99/09/15	16:00	m	92.0	Yellow		13283			predator scars both sides
99/09/15	16:00	f	82.9	Yellow		13284			large 15 cm. cut left side
99/09/15	16:00	m	94.0	Yellow		13285			split upper tail
99/09/15	16:00	f	80.5	Yellow		13286			bright, clean
99/09/15	16:00	f	81.9	Yellow		13287			minor abrasions both sides
99/09/15	16:00	m	82.4	Yellow		13288			dark, no marks
99/09/15	16:00	f	75.0	Yellow		13289			minor head abrasions
99/09/15	16:00	m	79.0	Yellow		13290			dark, split caudal
99/09/15	16:00	f	77.1	Yellow		13291			bright, clean
99/09/15	16:00	f	82.7	Yellow		13292			dorsal fin and body abrasions
99/09/15	19:15	f	71.4	Yellow		13293			bright, minor abrasions left side
99/09/15	19:15	f	73.0	Yellow		13294		Y	multiple abrasions, operculum damage
99/09/15	19:15	f	83.0	Yellow		13295			minor abrasions both sides
99/09/15	19:15	f	80.2	Yellow		13296			15 cm. gash left side, minor scars
99/09/15	19:15	f	84.2	Yellow		13297			tag bleeder, nose wounds, dorsal fin split
99/09/15	19:15	f	75.9	Yellow		13298			bright, clean
99/09/15	19:15	m	95.1	Yellow		13299			dime sized yellow scar tissue right side, (d/s migrant)
99/09/15	19:15	m	90.7	Yellow		13300			operculum damage right side
99/09/15	19:15	m	90.2	Yellow		13301			predator scar left side
99/09/15	19:15	m	80.6	Yellow		13302			split right pectoral, bright
99/09/15	19:15	m	81.0	Yellow		13303			large piece (1/2) left operculum absent
99/09/15	19:15	f	73.5	Yellow		13304			abrasions both sides
99/09/15	19:15	m	80.9	Yellow		13305			split dorsal with predator scar

Date (yymmdd)	Time	Sex	Fork Length (cm)	Tag Colour	Tag Letter	Tag #	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/15	19:15	f	73.5	Yellow		13306			bright, clean
99/09/15	19:15	f	76.8	Yellow		13307			adipose, head and body abrasions
99/09/15	19:15	f	69.5	Yellow		13308			left operculum damage
99/09/15	19:15	f	75.4	Yellow		13309		Y	20 cm. scar right side
99/09/15	19:15	f	75.3	Yellow		13310			bright, clean
99/09/15	19:15	f	75.5	Yellow		13311			abrasions both sides
99/09/15	19:15	f	71.5	Yellow		13312			bright, clean
99/09/16	12:15	m	78.3	Yellow		13313	52		operculum scrapes
99/09/16	12:15	f	73.8	Yellow		13314	53		min abrasions
99/09/16	12:15	f	83.8	Yellow		13315	54		minor abrasions, head abrasions
99/09/16	12:15	m	76.0	Yellow		13316	55		no marks
99/09/16	12:15	f	67.9	Yellow		13317	56		caudal split, head abrasions
99/09/16	12:15	m	82.9	Yellow		13318		Y	pectoral fin abrasions
99/09/16	12:15	m	84.0	Yellow		13319			dark
99/09/16	16:30	f	82.5	Yellow		13320			bright, clean
99/09/16	16:30	m	82.0	Yellow		13321			no marks
99/09/16	16:30	m	84.7	Yellow		13322			operculum damage, split right pectoral
99/09/16	16:30	m	88.8	Yellow		13323			head scrapes
99/09/16	16:30	m	83.9	Yellow		13324			no marks
99/09/16	16:30	m	81.0	Yellow		13325			no marks
99/09/16	16:30	m	77.2	Yellow		13326			dark, multiple abrasions
99/09/16	16:30	m	91.1	Yellow		13327			no marks
99/09/16	16:30	f	86.1	Yellow		13328			no marks
99/09/16	16:30	f	63.5	Yellow		13329			split caudal and dorsal fins
99/09/16	16:30	f	75.2	Yellow		13330			bright, minor abrasions left side
99/09/16	16:30	f	82.0	Yellow		13331			no marks
99/09/16	16:30	f	72.8	Yellow		13332			bright, clean
99/09/16	16:30	f	70.2	Yellow		13333			minor abrasions and operculum scrapes
99/09/16	16:30	f	77.0	Yellow		13334			minor abrasions
99/09/16	16:30	f	70.0	Yellow		13335			no marks
99/09/16	16:30	f	74.3	Yellow		13336		Y	multiple abrasions
99/09/16	16:30	f	76.7	Yellow		13337			bright, clean (d/s migrant)
99/09/16	16:30	f	73.4	Yellow		13338			bright, clean
99/09/16	16:30	f	76.0	Yellow		13339			5 cm scar on right side, split dorsal fin
99/09/16	19:30	m	87.6	Yellow		13340			dark
99/09/16	19:30	f	77.4	Yellow		13341			minor operculum scrape left side
99/09/16	19:30	f	81.3	Yellow		13342			clean
99/09/16	19:30	f	71.7	Yellow		13343			bright, clean
99/09/16	19:30	f	68.5	Yellow		13344			left operculum abrasions
99/09/16	19:30	f	73.2	Yellow		13345			multiple abrasions
99/09/16	19:30	f	74.4	Yellow		13346			multiple head abrasions
99/09/16	19:30	f	81.8	Yellow		13347			old scars right and left
99/09/16	19:30	m	75.5	Yellow		13348			old scars
99/09/16	19:30	f	77.8	Yellow		13349			bright, clean
99/09/16	19:30	f	70.7	Yellow		13350		Y	split dorsal fin, bulging left eye, stubby adipose, head abrasions
99/09/16	19:30	m	87.9	Yellow		13351			dark
99/09/17	16:30	f	73.4	Yellow		13352	57		bright, clean
99/09/17	16:30	m	92.9	Yellow		13353	58		ripped right operculum, lower tail wound, old predator scars
99/09/17	16:30	f	65.0	Yellow		13354	59		bright, clean
99/09/17	16:30	f	68.8	Yellow		13355	60		bright, clean, tag bleeder
99/09/17	16:30	f	79.5	Yellow		13356	61		top of tail absent, multiple tail splits
99/09/17	16:30	m	92.0	Yellow		13357	62		abrasions both sides

Date (yymmdd)	Time	Sex	Fork Length (cm)	Tag Colour	Tag Letter	Tag #	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/17	16:30	m	83.9	Yellow		13358			bright, tag bleeder
99/09/17	16:30	f	69.5	Yellow		13359			old scars right and left
99/09/17	16:30	f	77.0	Yellow		13360			minor abrasions left side
99/09/17	16:30	m	98.0	Yellow		13361			split dorsal, ripped left operculum, nose, head and operculum cuts
99/09/17	16:30	m	89.1	Yellow		13362			old scar left side
99/09/17	16:30	m	76.5	Yellow		13363			dorsal discoloration/ bruising
99/09/17	16:30	f	71.2	Yellow		13364			minor left operculum damage
99/09/17	16:30	f	71.0	Yellow		13365			minor lateral abrasions
99/09/17	16:30	m	83.5	Yellow		13366			bright, clean
99/09/17	16:30	f	72.9	Yellow		13367			abrasion left side, scar right side
99/09/17	16:30	f	65.0	Yellow		13368			right operculum damage
99/09/17	16:30	f	76.4	Yellow		13369			bright, left pelvic abrasion
99/09/17	16:30	f	74.0	Yellow		13370			minor abrasions, bright
99/09/17	16:30	f	72.4	Yellow		13371			abrasions both sides, left operculum scrape
99/09/17	16:30	f	72.9	Yellow		13372			abrasion left, minor operculum scrapes
99/09/17	16:30	f	75.0	Yellow		13373			bright, minor abrasions
99/09/17	16:30	m	86.1	Yellow		13374			dark, no marks
99/09/17	16:30	f	70.6	Yellow		13375		Y	multiple abrasion, operculum rip (d/s migrant)
99/09/17	16:30	f	76.9	Yellow		13376			left operculum scrape, minor abrasions
99/09/17	16:30	m	92.0	Yellow		13377			dorsal fin abrasions, red
99/09/17	16:30	f	76.0	Yellow		13378		Y	split dorsal, multiple abrasions
99/09/17	16:30	f	70.2	Yellow		13379			bright, small piece absent fromtop of tail
99/09/17	16:30	f	76.9	Yellow		13380			large 15 cm cut from anal fin to dorsal on right side
99/09/17	16:30	f	76.2	Yellow		13381			minor abrasions both sides
99/09/17	16:30	m	71.0	Yellow		13382			split left pectoral, abrasions dorsal
99/09/17	16:30	m	74.3	Yellow		13383			split tail, minor abrasions
99/09/17	16:30	f	74.5	Yellow		13384			abrasions both sides
99/09/17	20:15	m	83.7	Yellow		13385			minor abrasions, head scrapes
99/09/18	15:45	m	93.0	Yellow		13386			dark, no marks
99/09/18	15:45	m	85.1	Yellow		13387	63	Y	red, no marks
99/09/18	15:45	f	72.2	Yellow		13388	64		multiple abrasions
99/09/18	15:45	f	91.7	Yellow		13389	65	Y	multiple abrasions
99/09/18	15:45	m	90.2	Yellow		13390	66	Y	split caudal
99/09/18	15:45	f	83.1	Yellow		13391	67		split caudal minor abrasions
99/09/18	15:45	f	83.9	Yellow		13392			bright, clean
99/09/18	15:45	f	74.0	Yellow		13393			bright, clean
99/09/18	15:45	f	69.8	Yellow		13394		Y	multiple abrasions
99/09/18	15:45	m	78.1	Yellow		13395			bright, clean
99/09/18	15:45	f	68.5	Yellow		13396			bright, clean
99/09/18	15:45	m	80.3	Yellow		13397			minor abrasions right side
99/09/18	15:45	m	92.1	Yellow		13398			no marks
99/09/18	15:45	m	88.0	Yellow		13399			no marks
99/09/18	15:45	f	77.7	Yellow		13400			minor abrasions left side
99/09/18	15:45	m	94.0	Yellow		13401			dark
99/09/18	15:45	f	85.1	Yellow		13402			bright, clean
99/09/18	15:45	m	88.0	Yellow		13403		Y	multiple abrasions
99/09/18	15:45	f	71.5	Yellow		13404			bright, minor abrasions both sides
99/09/18	15:45	f	74.0	Yellow		13405			bright, clean
99/09/18	15:45	m	87.0	Yellow		13406			red

Date (yymmdd)	Time	Sex	Fork Length (cm)	Colour	Tag Letter	#	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/18	15:45	m	80.6	Yellow		13407			dorsal fin abrasions, abrasions both sides
99/09/18	15:45	f	76.8	Yellow		13408			bright, clean
99/09/18	15:45	m	96.0	Yellow		13409			top of tail gone, thin
99/09/18	15:45	m	89.0	Yellow		13410			red, left operculum scrapes
99/09/18	15:45	f	72.0	Yellow		13411			bright, head abrasions
99/09/18	15:45	m	88.0	Yellow		13412			dark, right operculum scrape
99/09/18	15:45	m	89.2	Yellow		13413			red, abrasions left side
99/09/18	15:45	f	73.1	Yellow		13414			bright, clean
99/09/18	15:45	m	94.4	Yellow		13415			clean
99/09/18	15:45	m	72.0	Yellow		13416			abrasions both sides, upper tail split
99/09/18	15:45	m	80.6	Yellow		13417			bright, clean
99/09/18	15:45	f	75.7	Yellow		13418			bright, clean
99/09/18	15:45	f	83.7	Yellow		13419			10 cm cut with fungus left side, 15 cm cut on left
99/09/18	15:45	m	72.1	Yellow		13420			minor head scrapes
99/09/18	15:45	f	80.1	Orange	N	8165			deformed dorsal
99/09/18	15:45	f	82.1	Orange	N	5793			minor head and operculum scrapes
99/09/18	15:45	f	74.8	Yellow		13421			abrasions both sides, head scrapes
99/09/18	15:45	f	74.1	Yellow		13422			split right pectoral, abrasions right and left
99/09/18	15:45	f	74.2	Yellow		13423			bright, split left pectoral
99/09/18	15:45	f	75.1	Yellow		13424			bright, clean
99/09/18	15:45	f	74.0	Yellow		13425			split dorsal and head scrapes
99/09/18	15:45	f	71.3	Yellow		13426			bright, nose wound
99/09/18	15:45	f	72.9	Yellow		13427			abrasions both sides
99/09/18	15:45	f	75.5	Yellow		13428			split tail, predator scars
99/09/18	15:45	m	76.8	Yellow		13429			10 cm gaping wound on right side
99/09/18	15:45	f	75.9	Yellow		13430			split dorsal fin
99/09/18	15:45	f	80.0	Yellow		13431		Y	multiple abrasions
99/09/18	19:00	f	73.2	Yellow		13432			bright, lower jaw wound
99/09/18	19:00	f	72.0	Yellow		13433			split tail, dorsal abrasions
99/09/18	19:00	f	83.8	Yellow		13434			left operculum scrapes
99/09/18	19:00	m	86.8	Yellow		13435			dark, abrasions both sides
99/09/18	19:00	f	83.0	Yellow		13436			dorsal abrasions
99/09/18	19:00	f	74.5	Yellow		13437			caudal split, abrasions both sides
99/09/18	19:00	m	91.5	Yellow		13438			no marks
99/09/18	19:00	m	94.0	Yellow		13439			tail wear, red
99/09/18	19:00	m	90.8	Yellow		13440			red
99/09/18	19:00	m	81.3	Yellow		13442		Y	ripped left operculum
99/09/18	19:00	m	85.5	Yellow		13443			red
99/09/18	19:00	m	80.0	Yellow		13444			no marks
99/09/18	19:00	f	78.5	Orange	N	5959			bright, clean
99/09/18	19:00	f	70.0	Yellow		13445			bright, abrasion right side
99/09/18	19:00	f	68.8	Yellow		13446			left operculum scrapes
99/09/18	19:00	f	71.0	Yellow		13447			bright, clean
99/09/18	19:00	f	79.8	Yellow		13448			bright, clean
99/09/18	19:00	f	72.8	Yellow		13449			bright, abrasions both sides
99/09/18	19:00	f	88.2	Yellow		13450			old scars, split dorsal, piece of adipose missing
99/09/18	19:00	m	85.8	Yellow		13451			operculum scrapes, red
99/09/18	19:00	f	74.0	Yellow		13452			bright, clean
99/09/18	19:00	f	74.0	Yellow		13453			bright, clean
99/09/18	19:00	f	76.2	Yellow		13454		Y	bright
99/09/18	19:00	f	80.8	Yellow		13455			bright, minor abrasions right side

Date (yymmdd)	Time	Sex	Fork Length (cm)	Colour	Tag Letter	#	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/18	19:00	f	68.3	Yellow		13456			bright, clean
99/09/18	19:00	f	71.0	Yellow		13457			multiple nose abrasions
99/09/18	19:00	f	73.8	Yellow		13458			bright, multiple abrasions right
99/09/18	19:00	f	70.1	Yellow		13459			bright
99/09/18	19:00	m	90.1	Yellow		13460			3 cm diameter hole behind eye with fungus
99/09/18	19:00	f	74.1	Yellow		13461			bright, abrasions both sides
99/09/18	19:00	f	74.2	Yellow		13462			bright
99/09/18	19:00	f	83.2	Yellow		13463			head abrasions, left eye gouge
99/09/18	19:00	m	93.2	Yellow		13464			nose and head abrasions
99/09/18	19:00	m	81.0	Yellow		13465			old predator scar left side
99/09/18	19:00	m	85.1	Yellow		13466			bright, clean
99/09/18	19:00	f	71.8	Yellow		13467			bright, clean
99/09/18	19:00	f	69.9	Yellow		13468			split dorsal with fungus
99/09/18	19:00	m	84.2	Yellow		13469			clean
99/09/18	19:00	m	75.3	Yellow		13471			swallowed hook, multiple abrasions
99/09/18	19:00	m	85.2	Yellow		13472			red
99/09/18	19:00	f	75.0	Yellow		13473			top of tail gone, abrasions both sides
99/09/18	19:00	m	78.9	Yellow		13474			operculum scrapes left side
99/09/18	19:00	f	71.0	Yellow		13475		Y	split caudal, multiple abrasions
99/09/18	19:00	m	81.9	Yellow		13476			bright, clean
99/09/18	19:00	f	74.0	Yellow		13477			bright, abrasions right and left
99/09/18	19:00	m	75.0	Yellow		13478			multiple abrasions both sides
99/09/18	19:00	f	75.0	Yellow		13479			bright, head abrasions
99/09/18	19:00	m	77.4	Yellow		13480			head scrapes
99/09/18	19:00	f	69.0	Yellow		13481			bright, abrasions on right side
99/09/19	9:30	f	73.9	Yellow		13482	68		min abrasions both sides
99/09/19	9:30	f	76.0	Yellow		13483	69	Y	abrasions both sides
99/09/19	9:30	f	87.4	Yellow		13484	70		bright, clean
99/09/19	9:30	m	78.1	Yellow		13485	71		red, no marks
99/09/19	9:30	f	86.7	Yellow		13486	72		minor abrasions both sides and operculum
99/09/19	9:30	f	86.0	Orange	N	5802			bright, head abrasions, split dorsal, previous adipose DNA sample
99/09/19	9:30	f	84.3	Orange	N	5860			bright, head and operculum scrapes
99/09/19	9:30	m	84.0	Yellow		13487			abrasion both sides
99/09/19	9:30	f	73.9	Yellow		13488			minor abrasions head and both sides
99/09/19	9:30	f	81.5	Yellow		13489			old predator scar left side, top of tail gone
99/09/19	9:30	m	90.0	Yellow		13490			red, no marks
99/09/19	9:30	m	92.1	Yellow		13491			dark, dark, dark
99/09/19	9:30	f	71.5	Yellow		13492			large fresh predator wound on dorsal with fungus
99/09/19	9:30	m	84.0	Yellow		13493			abrasions on head and both sides
99/09/19	9:30	m	80.9	Yellow		13494		Y	dorsal, adipose and operculum abrasions, fungus under right jaw
99/09/19	9:30	f	71.2	Yellow		13495			bright, clean
99/09/19	9:30	f	75.0	Yellow		13496			bright, clean
99/09/19	9:30	f	77.5	Yellow		13497			minor head and body abrasions
99/09/19	9:30	f	85.0	Yellow		13498			abrasions both sides, split dorsal
99/09/19	9:30	f	74.5	Yellow		13499			bright, clean
99/09/19	9:30	f	74.9	Yellow		13500			minor abrasions left side
99/09/19	9:30	f	85.0	Yellow		13501			bright, clean
99/09/19	9:30	f	73.9	Yellow		13502			minor head and body abrasions

Date (yymmdd)	Time	Sex	Fork Length (cm)	Tag Colour	Tag Letter	Tag #	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/19	9:30	m	84.7	Yellow		13503			minor head abrasions
99/09/19	9:30	m	82.8	Yellow		13504			head abrasions
99/09/19	9:30	m	76.7	Yellow		13505			minor abrasions right, top of tail abrasions
99/09/19	9:30	f	84.9	Yellow		13506			large fresh wound on right cheek, multiple abrasions, split tail
99/09/19	9:30	f	79.5	Yellow		13507		Y	caudal and body abrasions
99/09/19	9:30	m	85.0	Yellow		13508			old scar between dorsal and adipose fins
99/09/19	9:30	f	74.9	Yellow		13509			split dorsal with fungus
99/09/19	9:30	f	77.9	Yellow		13510			bright, clean
99/09/19	9:30	m	81.0	Yellow		13511			dark, no marks
99/09/19	9:30	m	78.0	Yellow		13512			chunk from end of nose
99/09/19	9:30	m	73.7	Yellow		13513			dark, no marks
99/09/19	9:30	m	80.2	Yellow		13514			dark, split dorsal with fungus
99/09/19	14:30	f	75.0	Yellow		13515			operculum scrapes, open wound right side (with fungus)
99/09/19	14:30	m	78.5	Yellow		13516		Y	abrasions,right eye bulging, multiple head wounds with fungus
99/09/19	14:30	f	74.9	Yellow		13517			nose wound, old scar left, bright
99/09/19	14:30	f	71.5	Yellow		13518		Y	multiple abrasions, badly ripped right operculum with chunk missing
99/09/19	14:30	f	75.9	Yellow		13519			abrasions left side with fungus, head scrapes
99/09/19	14:30	f	69.5	Yellow		13520			min abrasions, bright
99/09/19	14:30	m	94.2	Yellow		13521			red, old predator scar left side
99/09/19	14:30	f	72.9	Yellow		13522			split dorsal, minor abrasions
99/09/19	14:30	f	75.4	Yellow		13523			minor abrasions both sides
99/09/19	14:30	m	76.3	Yellow		13524			dark, no marks
99/09/19	14:30	f	74.5	Yellow		13525			abrasions both sides, minor head scrapes
99/09/19	14:30	m	97.5	Yellow		13526			multiple fin splits with abrasions, lower tail wound, ripped operculum with fungus
99/09/19	14:30	f	70.0	Yellow		13527			head and body abrasions
99/09/19	14:30	f	75.1	Yellow		13528			large scar, wound on right side from dorsal fin to pelvic fin
99/09/19	14:30	f	71.7	Yellow		13529			old scars right side, bright
99/09/19	14:30	f	72.0	Yellow		13530			stubby adipose, abrasions on head with fungus, split pectoral
99/09/19	14:30	f	74.1	Yellow		13531			split dorsal, abrasions, both sides
99/09/19	14:30	m	78.6	Yellow		13532			old scars right side
99/09/19	14:30	f	71.9	Yellow		13533			minor abrasions left side
99/09/19	14:30	f	70.9	Yellow		13534			minor abrasions both sides
99/09/19	14:30	f	75.0	Yellow		13535			abrasion both sides, head scrapes
99/09/19	14:30	m	93.2	Yellow		13536			red, no marks
99/09/19	14:30	f	73.5	Yellow		13537			abrasions both sides, tail splits
99/09/19	14:30	f	71.5	Yellow		13538			minor abrasions both sides
99/09/19	14:30	f	75.4	Yellow		13539			abrasion right side, tag bleeder
99/09/19	14:30	f	83.5	Yellow		13540			abrasions both sides
99/09/19	14:30	f	73.4	Yellow		13541			old predator scar right side
99/09/19	14:30	f	79.2	Yellow		13542			split dorsal and head scrapes
99/09/19	14:30	f	71.0	Yellow		13543			abrasions both sides
99/09/19	14:30	f	82.9	Yellow		13544			abrasions right side
99/09/19	14:30	f	75.2	Yellow		13545			abrasions right side
99/09/19	14:30	f	75.4	Yellow		13546			bright, clean
99/09/19	14:30	m	84.0	Yellow		13547			red, no marks

Date (yymmdd)	Time	Sex	Fork Length (cm)	Colour	Tag Letter	#	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/19	14:30	m	74.1	Yellow		13548			old scar between dorsal and adipose fins
99/09/19	14:30	f	77.4	Yellow		13549			bright, clean
99/09/19	14:30	f	78.8	Yellow		13550			abrasions left operculum and both sides
99/09/19	14:30	f	80.7	Yellow		13551			bright, clean (lost orange tag from left side of dorsal fin
99/09/19	14:30	m	86.0	Yellow		13552			old predator scars both sides
99/09/19	14:30	m	90.9	Yellow		13553			red, no marks
99/09/19	14:30	f	76.0	Yellow		13554			old scar left side abrasions right
99/09/19	14:30	f	78.1	Yellow		13555			old scar right, abrasions left, piece out of adipose fin
99/09/19	14:30	f	77.1	Yellow		13556			dark, split right pectoral fin
99/09/19	14:30	f	69.9	Yellow		13557			bright, minor abrasions left
99/09/19	19:00	f	77.0	Orange	N	5704/ 5705			abrasions left side
99/09/19	19:00	f	89.1	Orange	N	4694			abrasions right side, bright
99/09/19	19:00	f	81.2	Yellow		13558			bright, old scars, lower tail wound
99/09/19	19:00	m	81.9	Yellow		13559			minor head and operculum scrapes
99/09/19	19:00	m	80.2	Yellow		13560			olds scars both sides
99/09/19	19:00	f	84.2	Yellow		13561			fresh wound left side
99/09/19	19:00	f	69.0	Yellow		13562			split left pectoral, bright
99/09/19	19:00	f	72.9	Yellow		13563			multiple abrasions left side
99/09/19	19:00	f	79.0	Yellow		13564			abrasions both sides, head and operculum scrapes with fungus
99/09/19	19:00	f	76.9	Yellow		13565			abrasions left side
99/09/19	19:00	m	93.1	Yellow		13566			bright, lower tail and dorsal abrasions
99/09/19	19:00	m	76.9	Yellow		13567			right operculum scrapes, lower tail gone
99/09/19	19:00	m	76.5	Yellow		13568			bright, clean, few spots
99/09/19	19:00	f	74.0	Yellow		13569			minor abrasions
99/09/19	19:00	m	76.0	Yellow		13570			red, abrasions both sides
99/09/19	19:00	f	83.7	Yellow		13571			old scar right side, abrasions both sides
99/09/19	19:00	f	71.0	Yellow		13572			bright, clean
99/09/19	19:00	f	69.5	Yellow		13573			minor abrasions both sides, piece missing from left operculum
99/09/19	19:00	f	77.9	Yellow		13574			bright, clean
99/09/19	19:00	m	75.1	Yellow		13575			left operculum scrape
99/09/19	19:00	f	69.5	Yellow		13576			abrasions both sides
99/09/19	19:00	m	80.7	Yellow		13577			dark, abrasions both sides, operculum and head scrapes
99/09/19	19:00	m	86.0	Yellow		13578			red, head scrapes
99/09/19	19:00	f	72.3	Yellow		13579			old scars both sides
99/09/19	19:00	f	73.5	Yellow		13580			bright, clean
99/09/19	19:00	f	81.0	Yellow		13581			minor abrasions left side
99/09/19	19:00	m	77.9	Yellow		13582			red, no marks
99/09/19	19:00	f	72.4	Yellow		13583			large predator wound left side
99/09/19	19:00	f	74.8	Yellow		13584			abrasions left, split dorsal fin
99/09/19	19:00	f	70.3	Yellow		13585			abrasions left side
99/09/19	19:00	f	81.2	Yellow		13586			min abrasions both sides
99/09/19	19:00	f	79.9	Yellow		13587			dark, min abrasions left side
99/09/19	19:00	f	82.1	Yellow		13588			abrasions both sides
99/09/19	19:00	f	82.4	Yellow		13589			bright, clean
99/09/19	19:00	m	84.0	Yellow		13590			lower right jaw wound
99/09/19	19:00	f	75.5	Yellow		13591		Y	bright, split caudal

Date (yymmdd)	Time	Sex	Fork Length (cm)	Colour	Tag Letter	#	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/20	17:00	f	72.9	Yellow		13592	73		abrasions both sides
99/09/20	17:00	f	80.4	Yellow		13593	74		predator scar, operculum scrapes
99/09/20	17:00	m	93.4	Yellow		13594	75		clean
99/09/20	17:00	m	78.0	Yellow		13595	76		lower tail wear
99/09/20	17:00	f	68.0	Orange		13596	77		split dorsal , bright
99/09/20	17:00	f	85.7	Orange	N	5914			bright, abrasions right and left
99/09/20	17:00	f	83.5	Orange	N	5992			bright, old predator scar right side near dorsal
99/09/20	17:00	f	73.8	Yellow		13597			abrasions right side, minor head scrapes
99/09/20	17:00	f	76.2	Yellow		13598			split tail and dorsal, abrasions right and left side
99/09/20	17:00	f	73.0	Yellow		13599			bright, head scrapes
99/09/20	17:00	f	77.8	Yellow		13600			abrasions left side, split left pectoral (released downstream)
99/09/20	17:00	f	82.0	Yellow		13601			abrasions both sides
99/09/20	17:00	f	71.8	Yellow		13602			split tail, abrasions both sides
99/09/20	17:00	f	78.1	Yellow		13603			bright, minor abrasions right
99/09/20	17:00	f	82.9	Yellow		13604			bright, dorsal fin abrasions
99/09/20	17:00	m	93.0	Yellow		13605			dark, no spots
99/09/20	17:00	f	77.0	Yellow		13606			
99/09/20	17:00	f	73.8	Yellow		13607			abrasions right side
99/09/20	17:00	f	77.0	Yellow		13608			bright, clean
99/09/20	17:00	m	91.0	Yellow		13609			caudal and right pectoral wear
99/09/20	17:00	f	76.3	Yellow		13610			bright, predator scar right side
99/09/20	17:00	f	72.9	Yellow		13611		Y	multiple abrasions
99/09/20	17:00	f	74.2	Yellow		13612			abrasions right side, old scar left side
99/09/20	17:00	m	78.7	Yellow		13613			abrasions left side
99/09/20	17:00	m	84.0	Yellow		13614			dark
99/09/20	17:00	m	93.2	Yellow		13615			split tail, dark
99/09/20	17:00	f	73.8	Yellow		13616			bright, abrasions left side
99/09/20	19:30	f	81.2	Yellow		13617			bright, abrasions right side
99/09/20	19:30	f	70.1	Yellow		13618			bright, abrasions left side, head scrapes
99/09/20	19:30	m	90.3	Yellow		13619			ripped left operculum
99/09/20	19:30	m	79.8	Yellow		13620			operculum scrape left side, red
99/09/20	19:30	m	94.0	Yellow		13621			dark, left pectoral abrasions with fungus
99/09/20	19:30	f	69.6	Yellow		13622			bright, left operculum scrapes
99/09/20	19:30	f	71.5	Yellow		13623			large 8-cm wound on top of head
99/09/20	19:30	f	73.4	Yellow		13624			bright, split left pelvic, abrasions
99/09/20	19:30	f	73.0	Yellow		13625			bright, abrasions both sides
99/09/20	19:30	m	81.3	Yellow		13626			no marks
99/09/21	13:00	f	70.1	Yellow		13627	78		abrasions left side, ripped left operculum
99/09/21	13:00	m	90.7	Yellow		13628			old predator scar left side
99/09/21	13:00	f	75.0	Yellow		13629	79		abrasions on both sides and anal fin
99/09/21	13:00	m	91.1	Yellow		13630	80		15-cm scar right side, anal and caudal fin abrasions
99/09/21	16:00	f	71.5	Yellow		13631	81		bright, clean
99/09/21	16:00	f	74.0	Yellow		13632	82		bright, clean
99/09/21	16:00	f	75.2	Yellow		13633			abrasions left side, head scrapes
99/09/21	16:00	f	75.5	Yellow		13634			bright, abrasions left side
99/09/21	19:15	f	79.2	Yellow		13635			minor abrasions both sides, dark
99/09/21	19:15	f	70.2	Yellow		13636			min abrasions both sides

Date (yymmdd)	Time	Sex	Fork Length (cm)	Colour	Tag Letter	#	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/21	19:15	f	77.5	Yellow		13637			left operculum scrapes, maxilla ripped
99/09/21	19:15	m	90.5	Yellow		13638			dorsal fin has old scar and is split
99/09/21	19:15	m	88.0	Yellow		13639			old predator scar left, red
99/09/21	19:15	f	74.1	Yellow		13640			bright, clean
99/09/21	19:15	f	75.8	Yellow		13641			bright, clean
99/09/21	19:15	f	79.5	Yellow		13642		Y	split tail and dorsal
99/09/22	17:00	f	71.4	Yellow		13643	83		bright, abrasions both sides
99/09/23	9:15	m	76.8	Yellow		13644	84		bright, clean
99/09/23	9:15	f	81.0	Yellow		13645	85		bright, clean
99/09/23	9:15	f	76.7	Yellow		13646	86		abrasions right side of nose, tag bleeder
99/09/23	15:30	f	76.0	Yellow		13647	87	Y	abrasions, both sides, split tail
99/09/23	15:30	m	99.0	Yellow		13648	88		red, no marks
99/09/23	15:30	m	60.3	Yellow		13649	89		bright, clean
99/09/23	15:30	m	93.1	Yellow		13650	90		abrasions right side, red
99/09/23	15:30	f	79.5	Orange	N	5910			bright, abrasions, left side, head scrapes
99/09/23	15:30	m	88.9	Yellow		13651			red, no marks
99/09/23	15:30	f	76.9	Yellow		13652			bright, abrasions right side
99/09/23	15:30	m	85.0	Yellow		13653			lower tail split
99/09/23	15:30	m	81.0	Yellow		13654			multiple head and nose wounds
99/09/23	15:30	f	70.5	Yellow		13655			split tail, abrasions both sides
99/09/23	15:30	f	69.7	Yellow		13656			abrasions right side
99/09/23	15:30	f	83.0	Yellow		13657			split tail, head and operculum abrasions
99/09/23	15:30	m	85.2	Yellow		13658			head abrasions, dark
99/09/23	15:30	m	82.2	Yellow		13659			left eye damage, head scrapes
99/09/23	15:30	f	82.0	Yellow		13660			split dorsal and tail, tail wear, old ventral scar
99/09/23	15:30	f	71.3	Yellow		13661		Y	BAD gill net marks, split dorsal fin
99/09/23	15:30	m	83.9	Yellow		13662			red, abrasions both sides
99/09/23	15:30	m	82.5	Yellow		13663			no marks
99/09/23	15:30	f	79.7	Yellow		13664			fresh ventral ulceration
99/09/23	15:30	f	71.3	Yellow		13665			minor abrasions right side
99/09/23	15:30	f	72.7	Yellow		13666			predator scars both sides
99/09/23	15:30	f	72.1	Yellow		13667			old predator scar left side, abrasions both sides
99/09/23	15:30	f	71.0	Yellow		13668			bright, clean
99/09/23	15:30	f	83.9	Yellow		13669			bright, clean
99/09/23	15:30	f	72.5	Yellow		13670			bright, clean
99/09/23	15:30	m	88.8	Yellow		13671			abrasions left side
99/09/23	15:30	f	71.0	Yellow		13672			abrasions both sides, right maxilla deformed
99/09/23	15:30	f	76.9	Yellow		13673			old dorsal scar
99/09/23	15:30	f	71.0	Yellow		13674			split dorsal, bright
99/09/23	15:30	f	74.9	Yellow		13675			split tail, body and head abrasions
99/09/23	15:30	m	87.0	Yellow		13676			no marks
99/09/23	15:30	f	73.0	Yellow		13677			operculum scrapes, abrasions left side
99/09/23	15:30	f	69.7	Yellow		13678			dark, abrasions right side
99/09/23	19:00	f	79.0	Orange	N	5724			minor abrasions left side
99/09/23	19:00	m	73.9	Yellow		13679			abrasions dorsal
99/09/23	19:00	m	90.5	Yellow		13680			red, left side wound with fungus
99/09/23	19:00	m	98.0	Yellow		13681		Y	large ventral wound
99/09/23	19:00	f	84.1	Yellow		13682		Y	caudal split, wound left side
99/09/23	19:00	f	81.6	Yellow		13683			abrasions both sides

Date (yymmdd)	Time	Sex	Fork Length (cm)	Tag Colour	Tag Letter	Tag #	DNA/ Scale Sample	Gill Net Marks	Comments
99/09/23	19:00	m	92.1	Yellow		13684			red, no marks
99/09/23	19:00	m	90.0	Yellow		13685			right pectoral fin abrasions with fungus
99/09/23	19:00	m	80.5	Yellow		13686			abrasions right and left side, old scar left side
99/09/23	19:00	f	66.0	Yellow		13687			bright, clean
99/09/23	19:00	m	76.9	Yellow		13688			caudal wear, old scars left and right
99/09/23	19:00	f	85.5	Yellow		13689			bright, clean
99/09/23	19:00	m	81.5	Yellow		13690			dark, no marks
99/09/23	19:00	f	68.7	Yellow		13691		Y	pelvic fin abrasions, left fin 1/2 gone
99/09/23	19:00	f	88.2	Yellow		13692			old scar right side
99/09/23	19:00	f	71.9	Yellow		13693			bright, clean
99/09/23	19:00	f	68.0	Yellow		13694			bright, clean
99/09/23	19:00	f	76.7	Yellow		13695			bright, clean
99/09/23	19:00	m	88.5	Yellow		13696			bright, clean
99/09/23	19:00	f	75.4	Yellow		13697			bright, clean
99/09/23	19:00	f	80.5	Yellow		13698			min abrasions both sides
99/09/23	19:00	f	71.0	Yellow		13699			head abrasions, bright
99/09/23	19:00	f	66.9	Yellow		13700			abrasions both sides, bright
99/09/23	19:00	f	74.2	Yellow		13701			minor abrasions right side
99/09/24	14:00	f	82.0	Yellow		13702	91		bright, top of tail gone
99/09/24	14:00	f	69.1	Yellow		13703	92		bright, clean, tag bleeder
99/09/24	14:00	m	86.3	Yellow		13704	93		old scar on right side, tag bleeder
99/09/24	14:00	f	70.8	Yellow		13705	94		bright, clean, (released d/s)
99/09/24	17:00	m	81.6	Yellow		13706	95		clean
99/09/24	17:00	m	90.0	Yellow		13707			split dorsal, abrasions both sides
99/09/24	17:00	m	73.0	Yellow		13708			re
99/09/24	17:00	m	82.0	Yellow		13709			lower tail split
99/09/24	17:00	m	83.8	Yellow		13710			deformed dorsal fin
99/09/24	17:00	m	81.1	Yellow		13711			right operculum scrapes
99/09/24	17:00	f	84.5	Yellow		13712			abrasions both sides
99/09/24	19:10	f	73.6	Yellow		13713			bright, clean
99/09/25	17:00	f	72.8	Yellow		13714	96		split right pectoral, scars
99/09/26	18:40	f	80.3	Yellow		13715	97	Y	swollen abrasion on back near head
99/09/26	18:40	m	88.9	Yellow		13716	98		bright, clean
99/09/26	18:40	f	72.1	Yellow		13717	99		bright, clean, tag bleeder
99/09/26	18:40	f	81.5	Yellow		13718	100		head scrape, dorsal bruising
99/09/26	18:40	f	71.0	Yellow		13719			deformed dorsal. scars both sides
99/09/26	18:40	f	77.7	Yellow		13720			split dorsal, head scrapes
99/09/27	15:30	f	78.5	Yellow		13721			abrasions on both sides and head, split tail
99/09/29	15:30	f	71.7	Yellow		13722			split left pectoral, tag bleeder
99/09/29	18:30	m	80.7	Yellow		13723			red, no marks
99/09/29	18:30	f	72.9	Yellow		13724			bright, clean
99/09/29	19:10	f	67.8	Yellow		13725			abrasions right side, bright

Appendix Table 7. Bull trout data.

Date (yymmdd)	Location	Sex	Fork Length (cm)	DNA Vial #	Fin Env. #	Picture	Branch.	Comments
99/07/30	Sustut Fence	n/a	n/a					u/s migrant unsampled
99/08/01	Sustut Fence	m	65.0	1	1	R1-1	26	fence stranding mort
99/08/22	Sustut Fence	f	44.5	2	2	n/a	n/a	u/s migrant
99/08/23	Sustut Fence	f	47.0					u/s migrant
99/09/13	Sustut Fence	m	54.5					u/s migrant
99/09/15	Sustut Fence	unk	52.4					u/s migrant
99/09/18	Sustut Fence	m	53.3					u/s migrant
99/09/27	Sustut Fence	m	51.0					u/s migrant

Appendix Table 8. Rainbow trout data

Date (yymmdd)	Location	Sex	Fork Length (cm)	DNA Vial #	Scale Env. #	Picture	Comments
99/08/04	Sustut Fence	NA	39.0	1	1	n	u/s migrant clean
99/08/24	Sustut Fence	f	40.5	2	2	n	u/s migrant
99/09/09	Sustut Fence	UNK	28.3	3	3	n	u/s migrant
99/09/09	Sustut Fence	m	34.5	4	4	n	u/s migrant, predator wound, lots of fungus on operculum- healing
99/09/29	Sustut Fence	m	42.0	5	5	n	u/s migrant

Appendix Table 9. Chinook salmon DNA and scale samples.

Date (yymmdd)	Sex	Fork Length (cm)	Length P.O.H	Scale Book Position	Scale Book Number	DNA Vial	Comments
99/08/04	m	74.0	60.0	1-41	4884	Aug 4-10	
99/08/04	m	79.0	63.5	2-42	4884	Aug 4-10	
99/08/04	m	85.5	69.0	3-43	4884	Aug 4-10	
99/08/04	m	111.0	88.0	4-44	4884	Aug 4-10	
99/08/04	m	94.0	75.5	5-45	4884	Aug 4-10	
99/08/04	m	102.0	82.0	6-46	4884	Aug 4-10	
99/08/04	m	97.0	78.0	7-47	4884	Aug 4-10	
99/08/06	m	63.0	52.0	8-48	4884	Aug 4-10	
99/08/06	m	68.0	56.5	9-49	4884	Aug 4-10	
99/08/06	f	79.5	68.0	10-50	4884	Aug 4-10	
99/08/06	f	78.0	66.0	1-41	4885	Aug 4-10	
99/08/06	f	86.5	72.0	2-42	4885	Aug 4-10	
99/08/06	m	61.5	52.0	3-43	4885	Aug 4-10	
99/08/07	m	70.5	57.5	4-44	4885	Aug 4-10	
99/08/07	m	100.0	83.0	5-45	4885	Aug 4-10	
99/08/07	m	63.2	50.5	6-46	4885	Aug 4-10	
99/08/07	m	101.0	81.0	7-47	4885	Aug 4-10	
99/08/07	f	90.2	74.5	8-48	4885	Aug 4-10	
99/08/07	m	76.5	63.5	9-49	4885	Aug 4-10	
99/08/08	m	65.5	55.0	10-50	4885	Aug 4-10	
99/08/08	m	66.5	54.5	1-41	4886	Aug 4-10	
99/08/08	m	64.0	52.0	2-42	4886	Aug 4-10	
99/08/08	m	89.0	73.0	3-43	4886	Aug 4-10	
99/08/08	m	94.0	76.5	4-44	4886	Aug 4-10	
99/08/08	f	89.0	73.5	5-45	4886	Aug 4-10	
99/08/08	m	94.5	76.0	6-46	4886	Aug 4-10	
99/08/08	f	97.0	82.0	7-47	4886	Aug 4-10	
99/08/08	m	112.0	88.0	8-48	4886	Aug 4-10	
99/08/09	m	66.8	57.0	9-49	4886	Aug 4-10	
99/08/09	m	70.4	56.5	10-50	4886	Aug 4-10	
99/08/09	f	85.5	72.0	1-41	4887	Aug 4-10	
99/08/09	f	92.5	76.0	2-42	4887	Aug 4-10	
99/08/09	m	93.4	75.5	3-43	4887	Aug 4-10	
99/08/09	m	93.1	77.0	4-44	4887	Aug 4-10	
99/08/09	m	45.0	36.5	5-45	4887	Aug 4-10	
99/08/10	m	57.0	48.5	6-46	4887	Aug 4-10	
99/08/10	f	94.0	79.0	7-47	4887	Aug 4-10	
99/08/10	f	90.0	76.5	8-48	4887	Aug 4-10	
99/08/11	f	85.1	72.0	9-49	4887	Aug 11-17	
99/08/11	m	99.0	81.0	10-50	4887	Aug 11-17	
99/08/11	f	86.5	73.5	1-41	4888	Aug 11-17	
99/08/12	f	96.5	79.0	2-42	4888	Aug 11-17	
99/08/12	f	86.0	71.0	3-43	4888	Aug 11-17	
99/08/13	m	55.5	48.5	4-44	4888	Aug 11-17	
99/08/13	m	64.8	53.0	5-45	4888	Aug 11-17	
99/08/13	f	90.5	77.0	6-46	4888	Aug 11-17	
99/08/14	m	99.5	81.0	7-47	4888	Aug 11-17	
99/08/15	m	40.0	32.0	8-48	4888	Aug 11-17	
99/08/15	m	42.9	32.5	9-49	4888	Aug 11-17	
99/08/15	m	99.0	80.2	10-50	4888	Aug 11-17	
99/08/15	m	100.0	81.7	1-41	4889	Aug 11-17	
99/08/15	f	94.0	78.5	2-42	4889	Aug 11-17	
99/08/15	m	72.0	59.7	3-43	4889	Aug 11-17	
99/08/15	f	89.5	74.0	4-44	4889	Aug 11-17	

Date (yymmdd)	Sex	Fork Length (cm)	Length P.O.H	Scale Book Position	Scale Book Number	DNA Vial	Comments
99/08/15	f	68.1	57.3	5-45	4889	Aug 11-17	
99/08/16	m	54.0	43.5	6-46	4889	Aug 11-17	
99/08/18	m	51.0	42.0	7-47	4889	Aug 18-24	Trap box mort
99/08/18	f	84.0	69.5	8-48	4889	Aug 18-24	
99/08/18	f	88.4	73.0	9-49	4889	Aug 18-24	
99/08/18	f	87.0	72.5	10-50	4889	Aug 18-24	
99/08/20	m	59.0	48.5	1-41	4890	Aug 18-24	
99/08/20	m	94.0	75.5	2-42	4890	Aug 18-24	
99/08/20	f	80.0	67.1	3-43	4890	Aug 18-24	
99/08/24	m	108.0	84.0	4-44	4890	Not Taken	Fence Mort
99/08/24	m	69.0	56.5	5-45	4890	Not Taken	Fence Mort
99/08/24	f	97.0	80.0	6-46	4890	Not Taken	Fence Mort
99/08/24	m	69.0	57.0	Not Taken		Not Taken	Fence Mort
99/08/24	m	95.0	77.0	Not Taken		Not Taken	Fence Mort

Appendix Table 10. Chinook salmon carcass recoveries.

Date (yymmdd)	Sex	Fork Length (cm)	Length P.O.H	Comments
99/08/11	m	105.0	83.0	
99/08/11	f	95.0	75.5	
99/08/12	m	109.0	86.0	
99/08/12	f	95.0	75.5	
99/08/12	f	81.0	65.4	
99/08/13	m	100.0	78.4	
99/08/13	m	107.0	83.4	
99/08/13	m	97.8	77.0	
99/08/14	m	103.0	82.5	
99/08/14	m	111.0	90.0	
99/08/14	m	90.0	79.5	
99/08/14	m	94.0	79.0	
99/08/14	m	115.0	90.5	
99/08/14	m	71.5	61.0	
99/08/15	m	94.5	73.4	
99/08/15	m	69.2	55.5	
99/08/15	m	72.5	58.3	
99/08/15	m	67.0	52.8	
99/08/15	m	69.0	54.5	
99/08/15	m	108.5	85.1	
99/08/15	m	46.0	37.6	
99/08/15	m	108.0	87.5	
99/08/15	m	97.0	79.4	
99/08/15	m	105.0	84.7	
99/08/16	m	92.5	76.5	
99/08/16	m	101.0	78.7	
99/08/16	m	94.5	77.0	
99/08/16	m	100.0	80.5	
99/08/16	m	113.0	87.0	
99/08/16	f	92.0	74.0	

Date (yymmdd)	Sex	Fork Length (cm)	Length P.O.H	Comments
99/08/16	m	91.4	72.5	
99/08/16	f	91.0	74.5	post spawn mort
99/08/16	f	91.0	73.1	post spawn mort
99/08/16	f	92.5	76.0	
99/08/17	m	78.0	62.5	
99/08/17	m	90.0	72.5	
99/08/17	m	113.0	87.5	
99/08/17	m	92.2	73.0	
99/08/17	m	94.4	74.5	
99/08/17	m	104.5	81.9	
99/08/17	m	108.0	84.5	
99/08/17	m	102.0	80.1	
99/08/17	m	45.1	35.4	
99/08/17	m	99.0	76.2	
99/08/17	m	98.5	77.1	
99/08/17	m	85.6	67.2	
99/08/17	m	98.3	77.5	
99/08/18	m	91.5	77.0	
99/08/18	m	99.7	81.0	
99/08/18	m	63.5	55.4	
99/08/18	m	96.0	74.3	
99/08/18	m	92.0	74.5	
99/08/18	m	112.0	90.2	
99/08/18	m	97.8	79.0	
99/08/18	m	109.0	87.5	
99/08/18	m	98.0	72.0	
99/08/19	m	101.0	82.0	
99/08/19	m	102.5	79.0	
99/08/19	m	101.0	84.0	
99/08/19	m	64.2	50.1	
99/08/19	m	101.0	78.6	
99/08/19	m	67.5	54.6	
99/08/19	m	101.1	86.6	
99/08/19	m	96.6	77.1	
99/08/19	m	97.0	77.0	
99/08/20	f	90.4	76.0	
99/08/20	m	84.0	67.5	
99/08/20	m	106.0	84.5	
99/08/20	m	64.0	52.5	
99/08/20	m	78.5	63.0	
99/08/20	m	68.0	56.5	
99/08/20	f	96.5	80.0	
99/08/20	m	106.0	85.0	
99/08/20	m	106.5	85.6	
99/08/20	m	72.2	59.5	
99/08/20	m	74.0	59.5	
99/08/21	m	76.7	60.0	
99/08/21	m	102.3	78.4	
99/08/21	m	88.1	69.0	

Date (yymmdd)	Sex	Fork Length (cm)	Length P.O.H	Comments
99/08/21	m	70.0	55.5	
99/08/21	m	76.1	58.0	
99/08/21	f	99.0	79.1	
99/08/21	m	83.8	67.2	
99/08/21	m	98.0	76.2	
99/08/21	m	102.6	80.0	
99/08/21	m	70.5	55.5	
99/08/21	m	64.1	50.5	
99/08/21	m	98.9	77.1	
99/08/21	m	69.9	56.5	
99/08/21	m	594	47.2	
99/08/21	m	103.6	80.1	
99/08/21	m	76.2	60.9	
99/08/21	m	65.3	51.3	
99/08/21	m	101.1	77.7	
99/08/22	m	111.5	87.5	
99/08/22	m	92.0	73.0	
99/08/22	m	94.5	74.7	
99/08/22	m	112.2	88.8	
99/08/22	m	78.5	62.0	
99/08/22	m	72.1	58.5	
99/08/22	m	104.0	78.0	
99/08/22	m	61.8	50.0	
99/08/22	f	93.5	78.7	
99/08/22	m	52.0	44.9	
99/08/22	m	97.2	78.0	
99/08/22	m	63.7	51.3	
99/08/22	m	49.0	39.0	
99/08/22	m	99.0	78.9	
99/08/22	m	66.3	52.5	
99/08/22	m	105.3	82.5	
99/08/22	m	95.0	75.8	
99/08/23	m	111.1	80.0	
99/08/23	m	62.1	50.3	
99/08/23	m	60.3	47.0	
99/08/23	m	43.0	34.0	
99/08/23	m	91.8	74.0	
99/08/23	m	45.5	37.0	
99/08/23	m	65.8	53.0	
99/08/23	m	77.0	61.2	
99/08/23	m	40.0	32.2	
99/08/23	m	95.5	84.1	
99/08/23	m	102.0	75.0	
99/08/23	m	102.0	78.9	
99/08/23	m	67.0	53.3	
99/08/23	m	74.4	59.0	
99/08/23	m	68.1	54.0	
99/08/24	m	68.0	55.4	
99/08/24	m	63.3	53.8	

Date (yymmdd)	Sex	Fork Length (cm)	Length P.O.H	Comments
99/08/24	m	41.5	34.0	
99/08/24	m	108.0	84.0	
99/08/24	m	69.0	56.5	
99/08/24	f	97.0	80.0	
99/08/24	m	69.0	57.0	
99/08/24	m	95.0	77.0	
99/08/25	m	73.5	56.5	
99/08/25	f	76.5	58.0	
99/08/25	m	109.5	88.0	
99/08/25	m	80.5	62.5	
99/08/25	f	76.0	55.5	
99/08/25	m	95.0	75.0	
99/08/25	f	95.0	75.0	
99/08/25	m	62.5	50.5	
99/08/26	m	108.0	87.0	
99/08/26	m	64.6	52.0	
99/08/26	f	90.5	74.0	
99/08/26	m	52.0	45.5	
99/08/26	m	42.0	35.0	
99/08/26	m	80.0	66.0	
99/08/26	m	46.0	28.0	
99/08/26	m	59.0	49.0	
99/08/26	m	9.7	79.0	
99/08/26	m	112.0	89.0	
99/08/27	m	98.0	76.0	
99/08/27	f	98.0	82.0	
99/08/27	m	43.0	28.0	
99/08/28	f	80.0	not taken	
99/08/28	f	67.0	51.5	
99/08/28	m	103.0	78.0	
99/08/28	m	103.0	80.0	
99/08/29	f	98.0	79.0	
99/08/29	m	66.0	51.0	
99/08/30	m	95.0	71.0	
99/08/30	m	53.0	45.0	
99/08/30	m	84.0	67.0	
99/08/30	m	100.0	78.0	
99/08/31	f	88.0	68.0	
99/09/05	m	69.5	54.0	
99/09/06	m	n/a	n/a	
99/09/06	f	n/a	n/a	
99/09/06	m	73.0	58.5	

Appendix Table 11. Sockeye salmon DNA and scale samples.

Date (yymmdd)	Sex	Fork Length (cm)	Length P.O.H	Scale Book Position	Scale Book Number	DNA Vial	Comments
99/08/12	m	70.5	59.5	1-41	4881	Aug 11-17	
99/08/12	m	65.0	54.5	2-42	4881	Aug 11-17	
99/08/14	m	60.0	49.5	3-43	4881	Aug 11-17	
99/08/15	m	59.0	49.0	4-44	4881	Aug 11-17	
99/08/15	m	68.3	56.0	5-45	4881	Aug 11-17	
99/08/16	m	64.0	53.0	6-46	4881	Aug 11-17	
99/08/18	m	68.2	56.5	7-47	4881	Aug 18-24	
99/08/18	f	56.5	50.5	8-48	4881	Aug 18-24	
99/08/18	f	61.0	51.5	9-49	4881	Aug 18-24	
99/08/18	f	66.0	54.5	10-50	4881	Aug 18-24	
99/08/20	f	53.5	46.0	1-41	4882	Aug 18-24	
99/08/20	f	64.5	54.5	2-42	4882	Aug 18-24	
99/08/24	m	59.0	50.0	3-43	4882	Aug 18-24	
99/08/24	m	58.0	47.0	4-44	4882	Aug 18-24	
99/08/24	m	69.0	58.0	5-45	4882	Aug 18-24	
99/08/24	f	59.5	51.0	6-46	4882	Aug 18-24	
99/09/04	f	64.6	55.4	7-47	4882	Sep 1-7	
99/09/04	f	59.5	50.6	8-48	4882	Sep 1-7	
99/09/04	f	60.0	59.0	9-49	4882	Sep 1-7	
99/09/04	f	59.3	51.1	10-50	4882	Sep 1-7	
99/09/06	f	53.6	43.8	1-41	4891	Sep 1-7	
99/09/07	m	62.0	51.1	2-42	4891	Sep 1-7	

Appendix Table 12. Sockeye salmon carcass recoveries.

Date (yymmdd)	Sex	Fork Length (cm)	Length P.O.H	Comments
99/09/22	f	56.1	45.5	post spawn
99/09/25	f	59.4	49.0	post spawn
99/09/26	f	58.5	47.5	post spawn

Appendix Table 13. Coho salmon DNA and scale samples.

Date (yymmdd)	Sex	Fork Length (cm)	Length P.O.H	Scale Book Position	Scale Book Number	DNA Vial	Comments
99/08/23	m	50.8	40.7	1-41	4883	Aug 18-31	bright, bronze, no marks
99/08/25	m	49.5	0.0	2-42	4883	Aug 18-31	
99/08/30	m	50.0	0.0	3-43	4883	Aug 18-31	bright
99/09/04	m	56.0	46.2	4-44	4883	Sep 1-7	
99/09/06	m	58.9	48.4	5-45	4883	Sep 1-7	
99/09/07	m	60.5	49.5	6-46	4883	Sep 1-7	
99/09/08	f	65.0	54.1	7-47	4883	Sep 8-14	
99/09/08	m	70.1	56.8	8-48	4883	Sep 8-14	
99/09/08	f	65.9	52.2	9-49	4883	Sep 8-14	
99/09/09	f	64.0	54.1	10-50	4883	Sep 8-14	gill net marks
99/09/14	m	64.9	54.8	1-41	4892	Sep 8-14	
99/09/17	m	61.5	50.2	2-42	4892	Sep 15-21	
99/09/17	f	69.0	57.5	3-43	4892	Sep 15-21	
99/09/19	f	64.5	53.0	4-44	4892	Sep 15-21	scars both sides
99/09/19	f	64.1	54.1	5-45	4892	Sep 15-21	operculum damage, scrapes, fungus
99/09/19	m	51.0	41.0	6-46	4892	Sep 15-21	
99/09/20	m	52.0	42.2	7-47	4892	Sep 15-21	
99/09/20	m	65.0	54.1	8-48	4892	Sep 15-21	
99/09/21	m	49.0	40.8	9-49	4892	Sep 15-21	
99/09/21	f	65.8	54.5	10-50	4892	Sep 15-21	
99/09/21	m	59.5	47.7	1-41	4894	Sep 15-21	
99/09/21	f	68.0	57.5	2-42	4894	Sep 15-21	
99/09/22	m	67.0	54.3	3-43	4894	Sep 22-30	
99/09/22	m	54.5	45.0	4-44	4894	Sep 22-30	
99/09/22	m	51.7	41.7	5-45	4894	Sep 22-30	
99/09/23	m	60.0	49.0	6-46	4894	Sep 22-30	
99/09/23	m	64.1	51.0	7-47	4894	Sep 22-30	
99/09/23	f	68.8	56.5	8-48	4894	Sep 22-30	
99/09/26	m	53.5	45.9	9-49	4894	Sep 22-30	Downstream/ shot over fence!
99/09/26	f	58.0	49.0	10-50	4894	Sep 22-30	