Toboggan Creek Coho Smolt Enumeration 1997

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for

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Executive Summary

Juvenile coho were sampled in Toboggan Creek using a fyke trap, for the third consecutive year. Weekly sampling of coho was conducted over two to three sampling periods (3 - 25 hours in length) between May 7 and June 29, 1997. Data on discharge, water temperature, ambient temperature, weather conditions and trap performance were collected for each trap setting.

Fish species captured through out the study period include coho (*Oncorhynchus kisutch*), Dolly Varden (*Salvelinus malma*), rainbow trout/steelhead (*O. mykiss*), chinook salmon (*O. tsawytscha*), cutthroat trout (*O. clarki*) and lampreys (*Lampetra sp.*). A total of 1628 wild coho and 1276 hatchery coho were caught in the fyke trap in the spring of 1997. In addition, 133 rainbow trout/steelhead, three Dolly Varden, seven chinook, three cutthroat trout, and 21 lampreys were captured.

Trap performance was generally good, and it is felt that catches were a direct indicator of effort and migration rates. The peak of migration of coho smolts appeared to occur between May 28 and June 24, 1997. Water levels were unusually high, and fluctuated greatly over short periods of time. Increased water levels and changes in trap design appeared to increase mortality, and resulted in lowered sampling intensity towards the end of the study.

All data collected during the 1997 sampling period is located in Appendices 1 and 2. A general summary of the data and recommendations for the continuation of this sampling program, trap modifications, and trap operation on an annual basis are given.

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Acknowledgments

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1.0 Introduction

Toboggan Creek is a glacial tributary to the Bulkley River, within the Skeena watershed. Toboggan Creek has good spawning habitat, and its low gradient side channels and Toboggan Lake appear to provide a substantial amount of suitable rearing habitat for coho (*Oncorhynchus kisutch*). Adult coho returns have ranged from 1185 to 4500 in the past seven years (O'Neill pers. comm.). In addition to coho, steelhead (*O. mykiss*), rocky mountain whitefish (*Prosopium williamsoni)*, Dolly Varden (*Salvelinus malma*), and sculpin (*Cottus sp.*) are known to utilize the system (SISS).

Toboggan Creek is a relatively unique sub-drainage of the Skeena Watershed in that it has a hatchery facility which has augmented the Toboggan Creek coho stock since 1988 (1986 brood year). Smolts released from the hatchery are marked with coded wire tags, and adipose fin clips. An adult counting fence, located approximately 2.5 km upstream of the confluence of the creek with the Bulkley River (Figure 1), has served for the detailed enumeration of adult coho since 1989 and adult steelhead since 1993 (O'Neill pers. comm.). The adult fence is maintained and managed by the Toboggan Creek hatchery staff. Due to the availability of reliable adult escapement data, and the presence of a known number of marked coho smolts in the system, Toboggan Creek lends itself to studies in freshwater survival, age distribution at smoltification, migration timing and recruitment of juvenile coho salmon.

The primary focus of the "Toboggan Creek Smolt Project" is to collect information which can be used for an estimation of the number of wild coho smolts leaving Toboggan Creek. The 1997 juvenile index work will be complimented by adult coho studies conducted in the fall of 1993, 1994, 1995 and 1996. The fall studies provided escapement estimates of 1700, 2430, 1762 and 1185 adult coho returns, respectively (O'Neill pers. comm.). In addition, future adult escapement estimates conducted in 1997, 1998 and 1999 will provide valuable information on smolt to adult survival.

This is the third consecutive year of the coho smolt enumeration project in Toboggan Creek. The project was initiated in the spring of 1995 (SKR 1995), and repeated in the spring of 1996 and 1997. This report summarizes data collected in the 1997 field season. Data will be utilized by the Department of Fisheries to conduct abundance estimates.

The Toboggan Creek fyke trap study had the following objectives:

1. To collect data for the estimation wild coho abundance of Toboggan Creek by comparison with recaptures of marked hatchery fish.

2. To attain records of age and condition of wild coho and their time of migration from Toboggan Creek in 1997.

3. To collect information on condition (fork length and weight), migration timing and comparative abundance of other fish species present in Toboggan Creek.

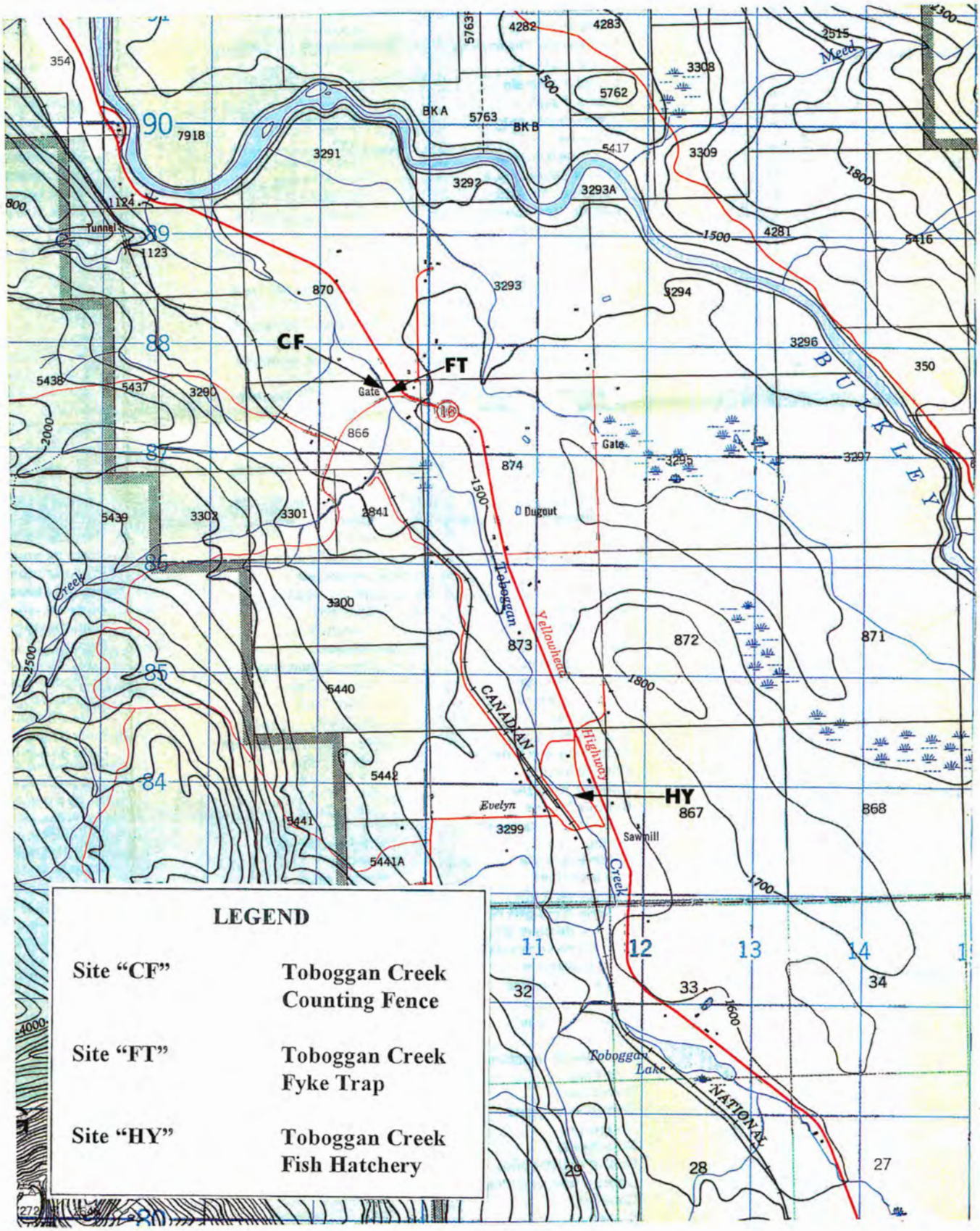

Figure 1. Location of study site (approximate scale = 1:50,000).

2.0 Materials and Methods

2.1 Study Site

A site just upstream from the adult counting fence was chosen for the location of the fyke net (Figure 1). This site facilitates the study due to its accessibility, current pattern, and pool depth. The fyke net could be set in such a way as to intercept most of the high velocity water (Figure 2), with the live box located in a relatively deep pool. Nearby trees allowed for secure anchoring of the trap to shore. The same site was used for coho smolt enumeration in the spring of 1995 and 1996. Consistency between sample sites should allow for some comparisons of capture, length, weight and age data collected in the three consecutive years of the study.

2.2 Fyke Trap

The fyke trap utilized in the spring of 1995 and 1996 was not available for the 1997 coho smolt enumeration. A new fyke trap was constructed. This fyke net was similar to the one previously used, in that it was mounted on a welded aluminum frame which supported the fyke net, a live box and floats. The trap could be easily assembled and disassembled, and floats could be manipulated to allow for maximum interception of the water column and adequate water levels in the live box. The fyke net could be easily cleaned due to the presence of zippers. The trap was anchored to the shore with a cable and a pulley to allow for the movement of the trap into the current for sampling, and onto shore for non-sampling periods. The exact location of the trap during sampling periods was secured via ropes attached to the trap and to the shore (Figure 2). As in 1996, rounded vertical aluminum bars were attached to the upstream end of the fyke net to allow for the deflection of larger debris away from the trap, while minimizing the impact on current patterns, and the catchability of juvenile fish.

Some of the more notable differences between the new fyke trap and the trap used in the previous two years of the study were in the nature of the live box. The live box was equipped with a screen on the downstream side, but was solid welded aluminum on the upstream side. This created some eddying in the fyke net. A welded metal aluminum funnel was inserted into the fyke net at the entrance to the live box to prevent the changes in water current from allowing fish to remain in the net, by forcing the water current into the live box. Some mortalities of fish were found in the live box, partly due to the nature of the screen on the downstream end of the box, and the currents inside the live box. A softer, nylon net was anchored to the inside of the live box, in front of the aluminum screen to reduce the amount of scale loss and mortality to fish.

The fyke trap was in operation for a total of 7.5 weeks (May 6 to June 29, 1997). The trap was fished for approximately two to three 24 hour periods every week between May 6 and June 11, 1997 (unless otherwise recorded). The trap was usually set by 09:00 hrs, and

Figure 2. Example of common Fyke net setting at Toboggan Creek in the spring of 1996. Note trap position which provided good trap performance by intercepting high velocity water.

retrieved at the same time the following day. During these settings, the trap was checked periodically (every 3-5 hours) for debris, tears and fishing performance. Sampling effort was reduced to sets of three to four hours between June 11 and June 29, 1997 in response to rapidly increasing water levels, and resultant increases in mortality during June. The trap was set at approximately 10:00 hrs and was monitored until 100 coho smolts had been captured, or until 04:00 hrs the following morning. An attempt was made to concentrate sampling efforts at periods of peak migration of hatchery and/or wild fish. Mike O'Neill (Toboggan Creek hatchery) was consulted in this regard. Temperature and water height were recorded for each trap setting.

2.3 Data Collection

Data collected for each trap setting included the time of trap setting and retrieval, water temperature, water height, weather conditions, trap fishing performance (subjective measure), and counts of fish captured by species. In addition, coho were inspected for adipose fin clips, and fish of hatchery and wild origin were enumerated separately. Fork length and weight data were collected for up to 200 fish of each wild species (except rainbow trout/steelhead). Fish were dipnetted from the live box into a bucket. All fish in the bucket were measured, even if the required sample size was exceeded to promote a random size/age sample of fish. Scale

samples of wild coho in different size categories (5 mm groups) were also taken. Scale samples in each size group did not exceed five fish.

3.0 Results and Discussion

3.1 Discharge and Temperature

The study period was notably warmer than the sampling period in the previous year of the study, but remained generally cooler than the 1995 sample season. Particularly May was a relatively warm and dry month. June 1997 remained relatively warm, with frequent thunder showers. Water height (Figure 3) was generally higher than in the two previous years, although the snow pack was comparable to snow levels present in 1996 (130-150% of normal in 1997, compared to 150% of normal in 1996, Barak pers. com.). Higher water levels in the spring of 1997 as compared to 1995 are due to higher snow levels in 1997 than in 1995 (a low snow year). Higher water levels in 1997 as compared to 1996 are attributable to warmer weather, causing rapid melting of the snow pack particularly in May. Water levels remained high into June 1997, due to frequent heavy rains. Maximum water levels at Toboggan Creek during the 1997 study period exceeded those found in the 1995 and 1996 field seasons (SKR 1995, SKR 1996). Rising water levels contributed to some debris movement in the system. Increases in discharge were also attributable to the removal of a beaver dam in Toboggan Creek upstream of the trapping site. The beaver dam was removed by CNR on or near May 26, 1997. The removal of the beaver dam caused water levels to rise approximately 15 cm at the hatchery. The increased water level and debris in Toboggan Creek necessitated the removal of the fyke trap set in Toboggan Creek on May 26, 1997.

The highest discharge, and largest change in flow in a 24 hour period was noted on June 4, 1997. The trap was removed earlier than usual on this trap setting, and the rapid increase in water levels caused a re-evaluation of the sampling regime. Subsequent to the rapid increase in water height, the sampling regime changed to a setting at night until 100 coho had been captured. The trap was removed by 04:00 hrs regardless of the number of fish captured.

Water temperatures in 1997 followed similar trends to water temperature data collected for the previous two years of the study. Although there was considerable fluctuation in water temperature through out the study, water temperature generally increased over the duration of the study period. The highest water temperatures were observed between May 20 and May 29, 1997, and a second peak in water temperature was noted on June 24, 1997.

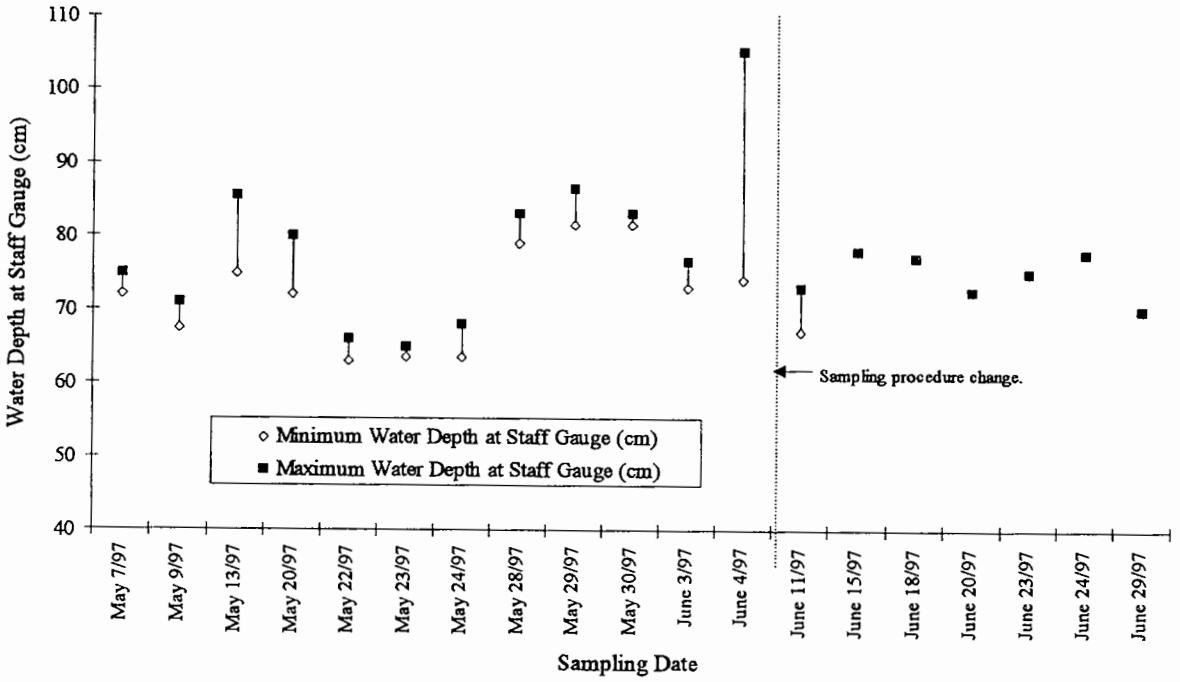

Figure 3. Staff gauge readings (water level) indicating variations in discharge at Toboggan Creek.

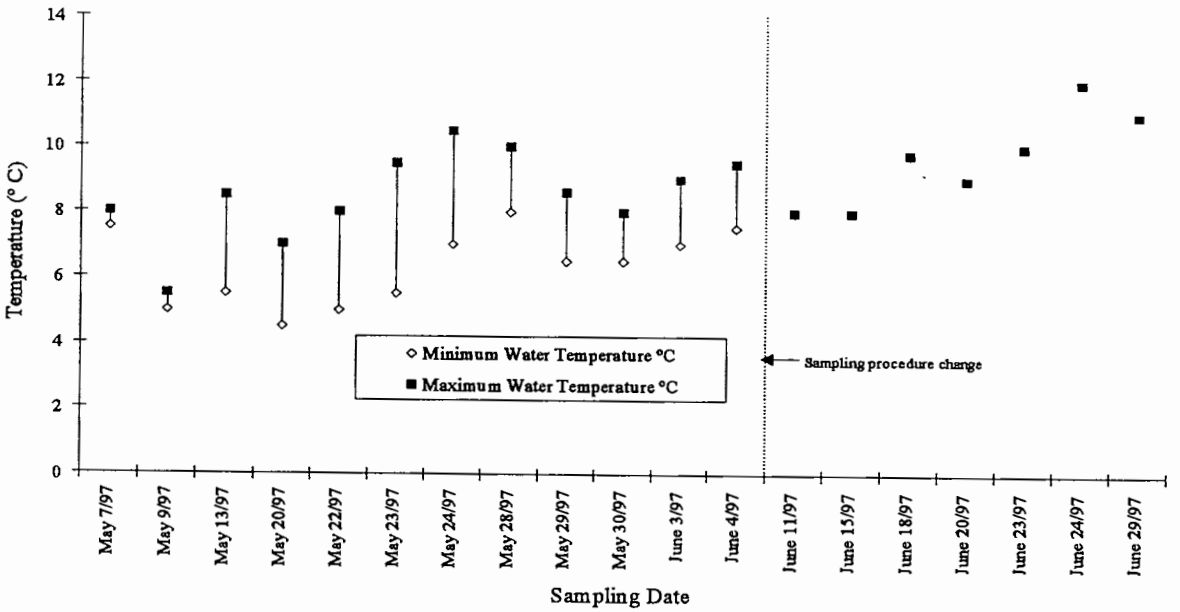

Figure 4. Recorded variation in temperature at sample times described in Appendix 3. Maximum and minimum temperatures do not necessarily refer to maximum and minimum daily temperatures.

3.2 Trap performance

In general, the trap performed well under most flow conditions presented at Toboggan Creek. High rain falls and high run offs from snow melt caused water levels to be higher than in previous years. Some flow conditions prevented setting of the trap. Trap settings during higher discharge, and changes in trap design resulted in increased mortality, and in some changes to channel morphology at the trap site. Consequently, trapping duration was reduced to periods of high migration (midnight to dawn), with continuous removal of fish from the trap, towards the end of the field portion of the project. Prolonged time spent in the trap appeared to be causing significant scale loss due to continuous attempts of fish to exit the trap through the rear metal screen. Overall however, the fyke trap appears to be a good sampling tool for this location, but care should be taken in monitoring trap performance and fish mortality.

The live box was of sufficient size for all of the sampling periods. The solid front of the live box caused some changes in water currents in the fyke net, which was alleviated by the insertion of a solid metal funnel. During high discharge, scale loss and mortality increased. This appeared to be primarily due to the aluminum screen at the back of the live box. The insertion of a softer net in front of the rear screen and continuous removal of fish from the trap reduced the rate of scale loss to less than 1% of fish handled.

3.3 Coho abundance and size

The number of coho caught during each trapping period was enumerated separately for wild and hatchery coho. In general, there was good agreement in the number of wild and hatchery coho throughout the study period (Figure 5). During the early part of the study, no hatchery coho were captured. 33,255 hatchery coho were released just after the initiation of the study (May 12, 1997 O'Neill pers. com.). Upon opening of the hatchery channel, only a few coho left the hatchery. A dramatic increase in the catch of hatchery coho was observed on May 29, 1997. The hatchery completed its release of coho into Toboggan Creek on June 6, 1997 and the frequency of hatchery coho in the fyke trap catch decreased after June 11, 1997. No hatchery coho were captured on June 24 or June 29, 1997.

As in previous years, wild coho smolt size varied through out the study period. The general trend was similar to the trends observed in 1995 and 1996, where coho smolts were generally smaller at the beginning of the study period. A predominance of coho fry was observed towards the end of the study period. These fish are suspected to remain in freshwater for an additional year prior to smoltification. Mean fork length of captured fish appeared to increase between the beginning of the study, and the peak of migration (near May 29, 1997), and then decreased towards the end of the study (Table 1, also see Appendix 1). The lowest mean fork length was observed at the last day of sampling (June 29, 1997). A similar trend was observed for the weight distribution of wild coho (Table 1).

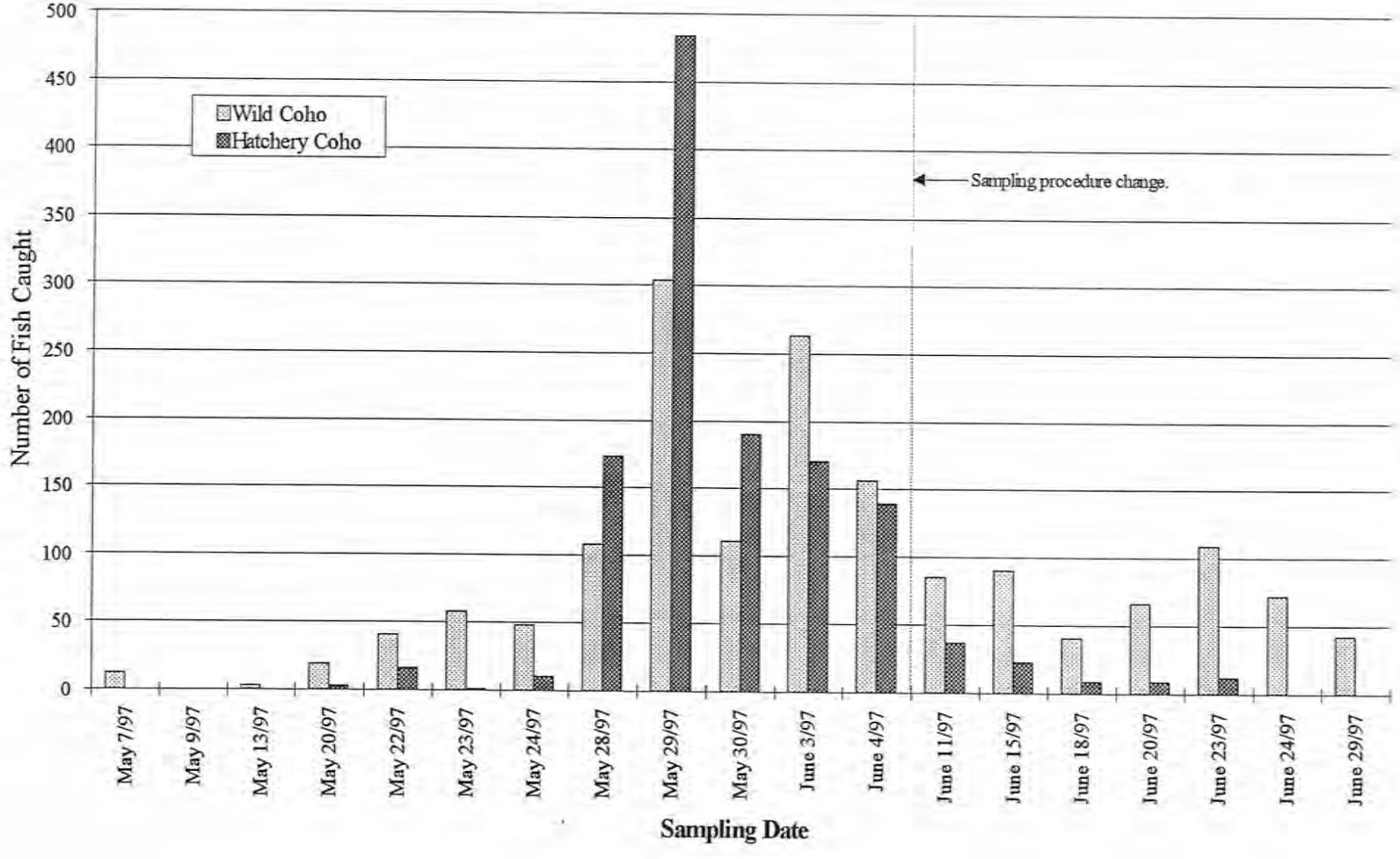

Figure 5. Number of wild and hatchery coho caught in the fyke net at Toboggan Creek during each sampling period.

Table 1. Summary of length and weight distribution of wild coho through out the 1997 coho smolt enumeration project.

Date	Fork Length (mm)			Weight (g)		
	N	Mean	SD	N	Mean	SD
May 7, 1997	12	**87.27**	13.074	12	**13.07**	3.803
May 9, 1997	0	**n.a.**	n.a.	0	**n.a.**	n.a.
May 13, 1997	3	**79.33**	20.133	3	**5.67**	3.584
May 20, 1997	19	**116.16**	14.912	19	**17.53**	6.146
May 22, 1997	41	**108.83**	13.709	41	**14.67**	4.719
May 23, 1997	58	**110.83**	15.912	58	**14.28**	5.433
May 24, 1997	48	**111.73**	11.583	48	**15.67**	5.226
May 28, 1997	108	**108.84**	13.37	108	**13.58**	4.301
May 29, 1997	304	**106.5**	17.337	304	**13.56**	6.072
May 30, 1997	111	**101.99**	16.208	111	**11.98**	5.073
June 3, 1997	263	**103.69**	12.806	110	**11.4**	4.266
June 4, 1997	156	**102.78**	13.931	105	**11.38**	4.607
June 11, 1997	85	**93.91**	15.546	85	**9.75**	3.862
June 15, 1997	90	**84.01**	21.787	90	**7.72**	4.301
June 18, 1997	66	**92.47**	13.809	66	**8.71**	2.943
June 20, 1997	109	**82.44**	17.278	109	**6.72**	3.166
June 24, 1997	72	**81.68**	14.95	72	**6.46**	3.137
June 29, 1997	42	**70.64**	12.606	42	**4.56**	2.295

Migration rates of hatchery and wild coho were generally similar. However, the migration of wild coho was protracted compared to the timing of catch of hatchery coho. Wild coho were caught earlier and later in the study than hatchery coho. The same result was observed in the previous two years of the study. The assumption of equal likelihood of capture of marked and un-marked fish in a mark recapture population estimate of population size should therefore be re-evaluated. One is more likely to capture un-marked fish early and late in the study period than marked fish. Since the study is centered around maximum migration of hatchery fish, and the release of hatchery fish into Toboggan Creek, the overall likelihood of capture of marked fish is higher than for un-marked fish, leading to an under estimate of the wild population size.

Some difficulties were encountered in this year's study due to the higher than normal water levels. This caused a reduction in the trapping effort. Consequently, the total number of fish captured may not be comparable between the three years of the study. The total number of wild and hatchery coho captured in the fyke net was lower compared to 1995 and 1996 (Table 2). This is likely in part due to the reduced trapping intensity after June 4, 1997, and possibly due to the number of adults returning upstream of the fish fence in various years. No clear correlation between water temperature, discharge and capture rate can be ascertained from the data collected. However, migration rates were low early in the study, coinciding with low water temperatures and low discharges. Peak flows did not result in peak capture, which may be attributable to lower trapping performance (i.e. the trap could not be set to intercept the

Table 2. Total number of wild and hatchery coho captured in the three years of the Toboggan Creek coho smolt enumeration project.

Year	# wild coho captured	# hatchery coho captured	# hatchery coho released
1995	2,867	2,552	
1996	1,829	1,692	32,638
1997	1,628	1,276	33,255

majority of flow, the trap could not be set in water conditions, or the trapping intensity was lowered).

3.4 Other species

Other species caught in the fyke net during the study include rainbow trout / steelhead, Dolly Varden, chinook, cutthroat trout and lampreys (Table 3). Cutthroat trout had not been captured in 1995 or 1996. In addition a few juvenile chinook were captured, but are not known to be common in Toboggan Creek. None were encountered at the adult counting fence, which is probably attributable to the timing of fence installation. The fence is generally installed to count coho migrating upstream. Chinook migration is largely completed by the time of initiation of adult coho counts. Mike O'Neill (pers. comm.) reported that the hatchery staff may have dead pitched one or two adult chinook last fall. Three adult male chinook were encountered at the counting fence in the fall of 1995. Lampreys and frogs were caught on a regular basis through out the study.

As in the previous two years, the second most abundant species in the fyke trap was rainbow trout/steelhead. A total of 133 rainbow trout/steelhead were captured in the 1997 season, as compared to 78 in 1996 and 128 in 1995. The capture of rainbow trout/steelhead was sporadic at the beginning of the 1997 coho smolt enumeration program, and appeared to build to a peak in the later portion of the study, despite the fact that trapping intensity was reduced at that time. This is consistent with migration rates observed for this species in 1995 and 1996. Dolly Varden abundance remained low, with only three Dolly Varden captured in the fyke net in the spring of 1997. This is comparable to the two Dolly Varden captured in 1996, and four Dolly Varden captured in 1995. No chinook were captured in 1996, but one chinook was captured in 1995, and three were captured in 1997. It is interesting to note that chinook were captured within the first few weeks of the study in both 1995 and 1997. Three cutthroat trout were captured in the Toboggan Creek fyke net in 1997, where as no cutthroat trout were identified in previous years.

Table 3. Summary of the number of juvenile fish caught in the fyke net set in Toboggan Creek, by species.

Date 1997	Species						
	Coho		Rainbow Trout	Dolly Varden	Chinook	Cutthroat Trout	Lamprey
	Wild	Hatchery					
May 7	12	0	0	0	5	0	1
May 9	0	0	1	0	0	0	0
May 13	3	0	2	0	0	0	1
May 20	19	3	1	0	0	0	0
May 22	41	16	3	1	2	0	0
May 23	58	1	5	0	0	0	0
May 24	48	10	6	0	0	0	0
May 28	108	173	7	0	0	0	3
May 29	304	484	1	0	0	1	0
May 30	111	190	0	0	0	0	0
June 3	263	170	0	0	0	0	0
June 4	156	139	4	0	0	1	5
June 11	85	37	4	1	0	0	0
June 15	90	23	3	1	0	0	2
June 18	41	9	5	0	0	0	1
June 20	66	9	12	0	0	0	1
June 23	109	12	36	0	0	0	0
June 24	72	0	26	0	0	0	6
June 29	72	0	17	0	0	0	0
Totals	1628	1276	133	3	7	3	21

4.0 Recommendations

1. Toboggan Creek should be used as an index stream to monitor fluctuations in freshwater productivity, juvenile survival, and possible smolt to adult survival of coho in the Bulkley River watershed.

2. Trapping intensity should be standardized to allow for a consistent level of trapping throughout the migration period. Due to the effectiveness and reduced mortalities of monitoring the trap continuously over night (fish collection on an hourly basis), it is recommended that the trap be set from 23:00 hrs to 07:00 hrs for each sampling period. Fish migration rates during daylight hours have been observed to be insignificant at this site.

3. A mark - recapture study should be conducted to estimate the efficiency of the fyke trap. Such a study could be achieved by obtaining smolts from Toboggan Lake or the hatchery, marking them and releasing them at timed intervals during the migration period. This would allow conservative estimates of the catch efficiency during the sampling period.

4. An alternative mark-recaptured study, in which a sub-sample of the fish caught in the trap could be marked and released immediately upstream of the trap, could also be conducted. This mark - recapture experiment should be repeated at different water levels in order to measure variations of trap performance, and would allow better interpretation of population estimates. The validity of this estimate of population size could be further tested by estimating the number of hatchery fish, which have a known population size.

5. Aluminum screens should be welded to the upstream side of the live box to allow some water flow into the live box. This may encourage fish to face into the current, rather than moving to the back of the trap where scale loss due to abrasion with the rear screen of the trap can be high.

6. Due to the restriction of fish access to the upper reaches of Toboggan Creek during lower flows, results may be more accurate if the coho smolt sampling site were located further downstream as close to the confluence as possible. The site could then serve for an index for Toboggan Creek in its entirety, with minor influence of the ability of adult coho to ascend the upper reaches of the system during low flow years. In addition, positioning the fyke trap downstream of the adult fence would minimize impacts of the smolt enumeration study on the operation of the adult counting fence.

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Appendix 1. Length and Weight Data for Juvenile Wild Coho Captured in Toboggan Creek, 1997

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
May 7/97	70	3.3			May 22/97	109	13.5		
"	74	4.5			"	109	14.3		
"	77	4.7			"	112	15.8		Mort
"	81	5.4			"	113	14.9		
"	82	6.4			"	113	17.6		
"	83	5.7			"	114	14.9		
"	83	5.2			"	114	15.1		
"	89	7.7			"	116	19.2		Mort
"	92	9.3			"	117	18.3		Mort
"	94	8.3			"	117	16.6		
"	111	13.5			"	118	18		Mort
"	111	15.9			"	118	16.3		
May 13/97	58	2.4			"	118	16.6		
"	82	5.1			"	118	16.8		
"	98	9.5			"	119	17.6		Mort
May 20/97	75	4.9			"	120	19.7		
"	99	10.8			"	123	19.9		
"	104	11.4			"	124	19.3		
"	108	13.1			"	128	20.9		
"	108	14.3			"	130	22.5		
"	112	14.1			"	142	29.8		
"	112	13.4			May 23/97	74	4.4		
"	113	14.9			"	77	4.4		
"	114	15.9		mort	"	82	6.7		
"	114	18.2			"	84	6.4		
"	116	16.1		mort	"	87	7.8		
"	118	17.1			"	89	8.6		
"	124	20.6		mort	"	92	8.2		
"	125	21.6			"	92	8		
"	126	22.6			"	96	9.2		
"	129	22.5			"	97	9.9		
"	134	26.6			"	97	9.7		
"	137	25.4			"	98	10.1		
"	139	29.6			"	99	10.6		
May 22/97	70	4.2			"	99	10.4		
"	76	5.9		Mort	"	100	10.2		
"	83	6.9			"	100	11.5		
"	92	8.2			"	102	10.7		Mort
"	93	9			"	102	10.9		
"	96	11			"	104	11		Moribund
"	100	11.8		Mort	"	104	11.9		
"	101	11.9		Mort	"	104	13.8		
"	102	10.5			"	105	12.1		
"	102	11.9			"	107	13.3		
"	103	12.7			"	107	12.1		
"	104	12.2		Mort	"	108	12.9		
"	105	13.1		Mort	"	108	10.2		
"	105	14.8		Mort	"	108	12.5		
"	105	11.8			"	108	13.1		
"	105	12.7			"	109	8.8		
"	105	12.6			"	110	12.3		
"	106	13.1			"	110	13.2		
"	108	14.1		Mort	"	111	14.7		
"	109	15.6		Mort	"	114	15.6		

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
May 23/97	114	14.7			May 24/97	115	16.4		
"	115	16.6		Mort	"	115	14.8		
"	115	12.5			"	116	14		Mort
"	116	15.3			"	116	20.9		
"	118	17			"	117	16.7		Mort
"	121	17.4			"	117	16.7		
"	122	16.5			"	117	16.5		
"	123	19.1			"	118	14		
"	123	19.4			"	119	19.5		Mort
"	123	19			"	119	17		
"	123	17.3			"	122	21.6		
"	124	19.1			"	123	23.7		
"	125	17.4			"	123	19.1		
"	126	18.8			"	124	18.5		
"	126	22.7			"	127	20.4		
"	127	17.2			"	128	23.7		Mort
"	128	20.3			"	132	27.2		
"	128	21.4			"	138	28.8		
"	129	21.2			"	139	32.5		Mort
"	132	24.2			May 28/97	64	3.2	33968-9	
"	132	22.2			"	65	3.1	33967-45	
"	135	18			"	69	3.9	33968-18	
"	138	21.9			"	84	6.6	33968-12	
"	140	22.6			"	84	6.5	33967-47	
"	141	31.2			"	85	6.6	33967-14	
May 24/97	84	6.7			"	92	7.4	33968-16	
"	91	8.7			"	93	8.2	33968-13	
"	92	10.1		Mort	"	93	8.3	33968-7	
"	92	9.2			"	94	9.6	33967-15	
"	93	9.1			"	95	8.4	33967-17	
"	98	11.2		Mort	"	95	8	33967-21	
"	100	9.7			"	96	9.1	33967-27	
"	101	12.7			"	97	10.1	33968-10	
"	102	9.7		Mort	"	98	9.1	33967-29	
"	103	11.6			"	98	10.1	33968-19	
"	106	11.5			"	98	9.8	33967-46	
"	106	13.4			"	98	9.5	33968 - 1	
"	107	13.5		Mort	"	100	10.5	33967-18	
"	107	13.9			"	100	10.9		scale loss
"	107	13.2			"	101	10.6	33968-21	
"	107	13.1			"	101	10.7	33968-5	
"	108	14		Mort	"	101	9.7	33968-8	
"	108	14.2			"	102	11.2		scale loss
"	109	15.6		Mort	"	102	11.3	33967-12	
"	109	15.2			"	102	9.6	33967-28	
"	109	12.8			"	104	11.7	33968-20	
"	110	16.1		Mort	"	105	13.2	33967-4	
"	111	13			"	105	12.3	33967-30	
"	112	14.5			"	105	10.8	33967-41	
"	112	14.6			"	106	13.9	33967-22	
"	112	14			"	106	12.2	33967-25	
"	113	15.9		Mort	"	106	15.8	33967-39	
"	114	15.1		Mort	"	106	12.9		
"	115	17.7		Mort	"	107	13.3		

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
May 28/97	107	13.8	33968-2		May 28/97	123	16.4	33967-32	
"	107	12.8			"	123	19.1		no scales
"	107	12.7			"	124	18.3	33967-7	
"	107	12.8			"	124	19.4		Mort
"	108	13.5		25% scale los	"	125	19.8		20% scale los
"	108	13	33967-23		"	125	19.2	33967-6	
"	108	13.2			"	125	16.6		no scales
"	108	13.8			"	125	20	33968-6	
"	108	12.4	33967-35		"	128	20.1	33967 - 1	
"	108	11.8	33967-50		"	128	17.5	33967-8	
"	108	12.4	33968-3		"	132	21.8	33968-22	
"	108	13.8			"	134	25.1	33968-15	
"	109	12.9	33967-19		"	135	22.1	33967-13	
"	109	14.2	33967-20		"	77	5.9	33968-23	Mort
"	109	13.3			"	94	8.9	33968-24	
"	110	12.6	33967-33		"	98	9.9	33968-26	
"	110				"	99	9.9	33968-27	
"	111	13.7	33967-37		"	112	14.1		
"	111	15	33967-48		"	128	21	'	No scales
"	112	14.5	33967-26		"	134	26.8	33968-25	
"	112	16.4		Mort	May 29/97	68	3.4	33968-42	
"	112	14.7			"	81	6	33968-48	
"	113	12.1	33967-10		"	82	5.8	33968-33	
"	113	12.8	33967-11		"	84	6	33968-29	
"	113	14.1		scale loss	"	84	6.6	33968-49	
"	113	14.7			"	86	6.3	33968-30	
"	113	15.3		mort	"	86	6.7	33969-01	
"	113	14.2			"	89	6.9	33968-35	
"	114	15			"	89	7.4	33968-36	
"	114	15	33967-38		"	90	7.4	33968-43	
"	114	13.7	33967-42		"	90	8.3	33968-44	
"	114	13.8	33967-43		"	91	7.8		
"	114	13.3	33967-49		"	91	7.7		
"	114	15.3			"	92	9.1		
"	115	15.6	33967-16		"	94	7.9	33968-32	
"	115	15.6	33967-24		"	94	9.6		
"	115	12.2		Mort	"	95	8.9		
"	116	13.9	33968-14	Mort	"	95	9.3	33968-34	
"	116	12.8		Mort	"	96	9.5		
"	117	15	33967-31		"	96	9.3		
"	117	16.1	33968-17		"	96	9.6		
"	118	15.1	33967-2		"	97	12.4		
"	118	16.8	33967-5		"	97	9.9		
"	118	16	33968-11		"	97	9.6		
"	118	16.7	33967-36		"	97	8.9		
"	118	16.9	33967-40		"	98	10	33968-31	
"	118	16.8	33967-44		"	98	10.3		
"	118	17.8	33968-4		"	98	9.1		
"	121	19			"	98	9.9		
"	121	17.8	33967-34		"	98	9.6		
"	122	17.1	33967-9		"	98	9.7		
"	122	19.9			"	98	10.4		
"	123	19.4	33967-3		"	99	10.4		
					"	99	9.7		

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
May 29/97	99	10.3			May 29/97	116	17.1		
"	99	9.3			"	117	15.6		
"	100	10.3			"	118	17.1		
"	100	12.2			"	118	16.7		
"	101	11.4			"	119	14.9		
"	101	11.7			"	119	16.4		
"	101	11.5			"	119	15.5		
"	102	11.1			"	120	16		
"	102	11.6			"	121	19.2		
"	103	11.1			"	121	17.6		
"	104	10.7			"	121	16.8		
"	104	12.8			"	122	16		
"	104	10.5			"	122	17.3		
"	104	12.6			"	122	18		
"	105	10.1			"	122	19.2		
"	105	12.5			"	124	16.1		
"	105	11.4			"	125	19.6		
"	105	14.1			"	125	21.2		
"	105	12.8			"	125	22.4		
"	106	14.9			"	126	18.8	33968-46	
"	106	13.5			"	126	19.4	33968-39	
"	107	12.7			"	126	22.1	33968-41	
"	107	12			"	128	24.9	33968-47	
"	108	13.3			"	128	21.4	33968-50	
"	108	14.7			"	128	20.9	33968-38	
"	109	13.7			"	129	23.5		
"	109	13.3			"	132	21.5	33968-45	
"	109	15.8			"	133	22.9	33968-40	
"	109	12.4			"	144	29.8	33968-37	
"	109	13.8			"	64	3.1	33969-6	
"	109	13.3			"	65	3.1	33969-9	
"	109	14.4			"	78	6.5	33969-18	
"	110	14.1			"	81	5.3	33969-8	
"	110	14.5			"	84	5.7	33969-3	
"	110	12.4			"	86	6.6	33969-4	
"	110	15.2			"	86	6.1	33969-5	
"	110	16.3			"	87	6.8	33969-13	
"	111	14.8			"	90	7.5	33969-7	
"	111	16.2			"	126	20.4	33969-11	
"	111	15.3			"	128	20.4	33969-12	
"	111	15.2			"	130	22.6	33969-14	
"	111	14.1			"	131	24.2	33969-15	
"	111	15			"	133	23.1	33969-17	
"	112	14.2			"	134	25.7	33969-19	
"	112	13.9			"	142	29.1	33969-16	
"	112	15.3			"	143	26.5	33969-20	
"	113	16.1			"	144	31.3	33969-2	
"	114	14.7			"	149	35.4	33969-10	
"	114	14.8			"	55	2.3	33969-24	
"	115	15.3			"	66	3.4	33969-22	
"	115	15.6			"	78	5.4	33969-21	
"	115	16.1			"	78	5.6	33969-23	
"	116	15.8			May 30/97	64	3.1	33969-27	

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
May 30/97	65	2.6	33969-37		May 30/97	106	12.3		
"	67	3.1	33969-25		"	106	12.5		
"	68	3.9	33969-26		"	106	14.3		
"	68	3.5	33969-28		"	106	12.7		
"	69	3.7	33969-35		"	106	12.5		
"	74	4.2	33969-32		"	106	13.1		
"	77	4.8	33969-36		"	106	12.5		
"	78	5.3	33969-34		"	107	13.5		
"	83	5.9			"	107	13.5		
"	83	5.8			"	108	13		
"	84	6.5			"	108	14.3		
"	85	7.2			"	108	12.6		
"	86	7	33969-30		"	108	12.4		
"	86	6.5			"	109	14		
"	87	6.7	33969-33		"	109	15.2		
"	88	7.8			"	109	15		
"	88	7	33969-31		"	109	13.3		
"	89	7.6			"	110	13.6		
"	89	7.5			"	110	13.4		
"	91	9			"	110	14.7		
"	92	8.3			"	111	15.2		
"	92	8.9			"	111	13.2		
"	92	7.8			"	112	12.5		
"	94	8.7			"	112	12.9		
"	94	9.7			"	112	14		
"	94	7.8			"	113	10.8		
"	94	9.7			"	113	13.1		
"	94	8.2			"	113	15.2		
"	95	9.6			"	114	16.6		
"	95	9.9			"	114	15		
"	96	9.3			"	115	16.8		
"	96	9.3			"	115	17.1		
"	96	9.3			"	116	15.7		
"	97	9.6			"	117	16.5		
"	97	10.5			"	118	18.1		
"	97	9.8			"	118	15.6		
"	97	11			"	118	18.4		
"	97	9.3			"	119	19.5		
"	98	10			"	121	17.5		
"	98	11.3			"	121	17.8		
"	99	11			"	121	17.5		
"	100	12.9			"	121	17.8		
"	100	10			"	122	17.5		
"	101	11.2			"	122	18.5		
"	102	12.2			"	123	19.1		
"	102	10.6			"	123	17.2		
"	102	11.4			"	123	21.2		
"	103	11.9			"	126	20.2		
"	103	12.3			"	126	22.3		
"	103	9.8			"	128	19.7		
"	104	11.8			"	141	27	33969-29	
"	104	12.5			"	63	2.8	33969-41	
"	104	12.2			"	73	4.3	33969-42	
"	105	11.9			"	78	4.9	33969-40	

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
May 30/97	134	27.1	33969-38		June 3/97	102	10.7		
"	134	24.7	33969-39		"	102	10.9		
June 3/97	59	1.8	33970-9		"	103	12.2		
"	63	2.9	33970-8		"	103	12.1		
"	66	3.3			"	104	12.3		
"	72	4.1	33970-5		"	104	12.3		
"	74	3.4			"	104	11.5		
"	76	4.2	33970-7		"	104	10.8		
"	78	5.2			"	104	12.3		
"	79	5.8	33970-4		"	105	12		
"	80	5.3	33970-6		"	105	10.8		
"	81	5.5			"	105	11.9		
"	84	5.9			"	106	11		
"	87	7.8			"	106	13.7		
"	87	7.2			"	106	11.9		
"	88	7.7			"	106	11.2		
"	89	7.5			"	106	11.6		
"	89	7.5			"	106	12.9		
"	90	8			"	106	11.7		
"	91	8			"	106	12.5		
"	92	8.6			"	106	11.7		
"	93	8.4			"	106	12.8		
"	93	9.3			"	107	12.3		
"	93	9.4			"	107	13.7		
"	93	8.8			"	108	12		
"	94	9.2			"	108	12.4		
"	94	8.7			"	108	13.3		
"	94	8.9			"	108	10.9		
"	95	9.6			"	108	14		
"	95	9			"	108	12.8		
"	96	9.8			"	110	13.7		
"	96	9.5			"	110	15.3		
"	96	10.2			"	110	13.6		
"	96	9			"	111	14		
"	96	9.4			"	111	14.8		
"	97	10.1			"	112	15.3		
"	97	9.8			"	112	15		
"	98	10.7			"	112	12.9		
"	98	10.5			"	113	14.9		
"	98	10.2			"	113	24.6		
"	98	10.1			"	113	15.8		
"	98	10.1			"	113	13.6		
"	99	10.8			"	113	15.2		
"	99	9.9			"	114	15.9		
"	100	10.2			"	114	14.7		
"	100	10.6			"	114	14.5		
"	101	10.2			"	117	17.7		
"	101	12.1			"	117	13.6		
"	101	11.6			"	117	16.6		
"	102	10.6			"	118	17.5		
"	102	13.7			"	119	17.4		
"	102	11			"	119	17.6		
"	102	11.5			"	128	18.8		

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
June 3/97	132	20.9			June 3/97	100			
"	133	20.7			"	100			
"	134	23.9			"	100			
"	134	23.3			"	101			
"	68	4	33970-10		"	101			
"	68	3	33970-11		"	101			
"	62				"	101			
"	68				"	102			
"	69				"	102			
"	83				"	102			
"	84				"	102			
"	84				"	102			
"	84				"	102			
"	88				"	102			
"	88				"	102			
"	88				"	102			
"	91				"	103			
"	91				"	103			
"	92				"	103			
"	92				"	103			
"	92				"	103			
"	93				"	103			
"	93				"	104			
"	93				"	104			
"	94				"	104			
"	94				"	104			
"	95				"	104			
"	95				"	104			
"	96				"	104			
"	96				"	105			
"	97				"	105			
"	98				"	105			
"	98				"	106			
"	98				"	106			
"	98				"	106			
"	98				"	106			
"	98				"	106			
"	98				"	106			
"	98				"	107			
"	99				"	107			
"	99				"	108			
"	99				"	108			
"	99				"	108			
"	99				"	108			
"	99				"	108			
"	100				"	108			
"	100				"	109			
"	100				"	109			

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
June 3/97	109				June 3/97	119			
"	109				"	121			
"	109				"	121			
"	109				"	122			
"	109				"	124			
"	110				"	124			
"	110				"	124			
"	110				"	125			
"	110				"	129			
"	110				"	135			
"	110				"	138			
"	110				June 4/97	33	0.3		
"	111				"	57	2.3	33970-13	
"	111				"	57	2.4	33970-16	
"	111				"	62	2.4	33970-14	
"	112				"	64	2.9	33970-17	
"	112				"	70	3.8		
"	112				"	74	4.5	33970-12	
"	112				"	81	6		
"	112				"	85	6.6		Scale Loss
"	112				"	86	6.6		Bruising
"	112				"	88	6.8		
"	113				"	89	7.7		
"	113				"	90	8.6		
"	113				"	90	8.5		*Scale loss
"	113				"	91	9.3		
"	113				"	91	8.3		
"	114				"	91	8.3		
"	114				"	92	8.5		
"	114				"	92	8		
"	114				"	93	8.7		
"	114				"	93	8.6		
"	114				"	93	8.4		
"	115				"	93	8.2		
"	115				"	93	11.1		Scale Loss
"	115				"	93	9.3		
"	115				"	94	9		
"	116				"	94	9.3		
"	116				"	94	8.7		
"	116				"	94	8.4		
"	117				"	95	8.1		
"	117				"	96	9.7		
"	117				"	96	9.6		
"	117				"	97	8.9		
"	117				"	97	9.9		
"	118				"	98	10		
"	118				"	98	10		
"	118				"	98	9.9		
"	118				"	98	11		
"	118				"	98	10.5		
"	119				"	99	11		
"	119				"	99	9.8		

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
June 4/97	99	10.6		Scale Loss	June 4/97	113	13.9		
"	100	10.8			"	114	15.5		
"	100	10.4			"	115	15.4		
"	101	11.8			"	115	15.7		
"	101	10.9			"	116	15.9		
"	101	11.2		Bruising	"	118	17.7		Scale Loss
"	102	10.9			"	120	18		
"	102	10.1		Scale Loss	"	121	17.9		
"	103	10.6			"	122	19.5		
"	103	10.8			"	127	19.2		
"	103	10.5			"	127	23.4		
"	103	12		Scale Loss	"	127	19.9		
"	103	10.6			"	132	22.8		
"	103	11.3			"	139	36	33970-15	
"	104	10.3			"	82			SL
"	104	11.7			"	88			
"	104	11.4			"	95			
"	104	11.3			"	96			
"	104	12.8		Scale Loss	"	96			
"	104	11.3			"	96			SL
"	104	12.2			"	97			
"	104	10.5			"	98			
"	104	12.8			"	98			
"	104	12.2		Scale Loss	"	99			
"	105	11.4			"	100			
"	105	11			"	101			
"	105	11.4		Scale Loss	"	102			SL
"	106	13.1			"	102			SL
"	106	12.1			"	102			SL
"	106	12.4			"	103			
"	106	12.5			"	103			SL
"	106	12.9			"	104			
"	107	12.4			"	105			SL
"	107	12.4			"	106			SL
"	108	13.7			"	106			
"	108	13.2			"	106			SL
"	108	15.3			"	108			SL
"	109	13.5			"	108			
"	109	13.6			"	109			
"	109	12.5			"	109			SL
"	109	12.8			"	109			
"	109	12.6			"	109			SL
"	109	13.2			"	109			SL
"	110	12.9			"	110			
"	110	13.9			"	111			
"	111	13.1			"	112			
"	113	14			"	113			
"	113	14.9		Scale Loss	"	115			
"	113	14.9			"	116			

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
June 4/97	116			SL	June 11/97	95	8.7		
"	118				"	96	8.9		
"	118			SL	"	96	9.3		
"	118				"	96	8.7		
"	118			SL	"	97	9.9		
"	118			SL	"	97	9.9		
"	119				"	97	9.4		
"	121			SL/B	"	98	9.9		
"	121			SL	"	98	10.9		
"	122				"	99	9		
"	122				"	99	11.7		
"	124			SL	"	99	9.6		
"	96				"	100	9.6		
"	105				"	100	10.6		
"	106				"	100	9.9		
"	108				"	101	10		
June 11/97	54	1.7	33970-23		"	101	10.7		
"	57	2.2			"	101	10		scrawny
"	58	2.3	33970-24		"	101	10.4		
"	59	2.4	33970-22		"	101	11.2		
"	62	2.6			"	102	12		
"	64	3			"	102	10.9		
"	67	3.7			"	102	11.1		
"	67	3			"	103	12.3		
"	68	4.1			"	103	11.4		
"	69	3.5			"	103	11.5		
"	70	3.5			"	104	10.9		
"	72	4	33970-21		"	104	12		
"	73	4.7	33970-19		"	104	13.3		
"	73	4.2	33970-20		"	105	12.6		
"	74	4.5	33970-18		"	105	12.8	mort (minor scale loss)	
"	76	4.9			"	105	12.1		
"	82	5.9			"	106	12.8		
"	83	6.3			"	106	12.4		
"	85	6.2			"	107	11.9		
"	87	7.1			"	107	14.1		
"	87	6.6			"	108	13.3		
"	88	7.3			"	108	13.5		
"	89	8.4			"	109	13		
"	89	8		mort	"	109	13.6		
"	89	7.7			"	110	13.2		
"	91	7.9			"	111	14.3		
"	92	7.7			"	112	14.5		
"	92	8.4			"	112	13.6		
"	93	9.5			"	113	14.8		
"	94	9.3			"	113	14.8		
"	94	9.4			"	114	15.5		
"	94	8.3			"	114	16		
"	94	8.9			"	116	15.6		
"	94	8.7			"	119	20.6		
"	94	8.3							

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
June 15/97	32	0.3		age 0+	June 15/97	94	9.2		
"	32	0.3			"	94	8.7		
"	33	0.3		age 0+	"	94	9.4		
"	33	0.4		mort	"	95	8.7		
"	34	0.4		age 0+	"	95	9.7		
"	34	0.4			"	95	9.9		
"	38	0.5		age 0+	"	95	9		
"	42	0.8		age 0+	"	96	9.9		
"	46	1.1		no scales	"	96	9.5		
"	47	1.4	33970-27		"	96	10.3		
"	59	2.2	33970-29		"	97	10.6		
"	62	3.2			"	97	9.8		
"	64	3.1			"	97	9.6		
"	65	3.2			"	98	11.1		
"	65	2.9			"	98	10.3		
"	66	3.6			"	98	10.2		
"	66	3.2			"	99	10.1		
"	68	4.1			"	99	9.8		
"	68	3.5			"	99	10.7		
"	68	4			"	99	10.1		
"	68	3.9			"	100	11		
"	68	2.7			"	100	9.9		
"	69	3.7			"	100	10.8		
"	72	3.8			"	100	12.4		
"	74	4.9	33970-25		"	101	10.9		
"	74	4.4	33970-26		"	101	11		
"	74	4	33970-28		"	102	11.6		
"	74	4.9			"	103	11		
"	74	4.8			"	103	11.5		
"	76	5.3			"	103	11.2		
"	76	5.1			"	105	12.9		
"	77	6.4			"	105	12.7		
"	78	5.1			"	106	12.4		
"	80	5.8			"	108	13.1		
"	83	6			"	109	14.2		
"	87	7.5			"	109	12.6		
"	87	7.3			"	109	14.6		
"	88	7.5			"	113	14.2		
"	88	8.5			"	113	15.8		
"	89	8.1			"	116	18		
"	89	8.9			"	120	19.2		
"	90	7.8			June 18/97	56	1.9		
"	90	9.6			"	57	1.8		
"	91	8.3			"	60	2.6		
"	92	7.9			"	62	2.7		
"	93	9.1			"	63	2.5		mort
"	93	8.6			"	66	3.3		
"	94	8.6			"	67	3.5		
"	94	9.4			"	67	3.3		

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
June 18/97	67	3.1		mort	June 20/97	90	7.7		
"	69	3.5			"	91	8.6		
"	72	4.2			"	91	7.2		
"	76	4.4			"	91	7.7		
"	78	5.5			"	92	8.4		
"	79	5.8			"	92	8		
"	80	6.1			"	92	7		
"	82	6.4			"	92	8.4		
"	83	7.6			"	92	8.1		
"	83	6.3			"	92	8		
"	83	6			"	93	8.2		
"	87	8.2			"	93	8.6		
"	88	8.1			"	93	9.7		
"	88	8.1			"	93	8		
"	89	8.3			"	94	8.9		
"	89	8.1			"	94	8.9		
"	90	8.2			"	94	8.8		
"	91	7.8			"	96	9.4		
"	92	8.7			"	96	9		
"	95	10.7			"	96	8.7		
"	96	9.8			"	96	8.9		
"	96	11.1			"	97	9.4		
"	97	10.1			"	97	9.5		
"	97	9.1			"	98	9.3		
"	97	10.5		mort	"	98	10.3		
"	98	11.5			"	99	10.2		
"	98	9.4			"	99	10		
"	99	10.1			"	99	9.4		
"	102	11.9			"	100	9.4		
"	104	11.7			"	100	10.2		
"	109	13			"	100	10.4		
"	112	14.3			"	100	9.4		
"	115	16.2			"	100	10.3		
June 20/97	33	0.5		no scales take	"	100	9.7		
"	67	3.7			"	101	10.8		
"	67	3.3			"	101	11.2		
"	68	3.4			"	101	10.2		mort
"	69	3.8			"	102	10.96		
"	70	3.9			"	102	10.7		
"	70	4.3			"	102	11.1		
"	75	4.6			"	103	11.7		
"	75	5.3			"	104	10.1		
"	76	5.6			"	106	12.9		
"	77	5.1			"	106	12.4		
"	78	5.5			"	109	12.1		
"	87	6.6			"	110	14.2		
"	89	7.9			"	112	15		
"	89	8.1			"	113	12.7		
"	89	7.1			"	122	17.7		
"	90	8.8							

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
June 23/97	27	0.2			June 23/97	82	5.2		
"	32	0.3			"	82	6.4		
"	33	0.3			"	84	6.9		
"	34	0.2			"	84	7.1		
"	44	2.9			"	85	6.9		
"	58	2			"	85	7.7		
"	61	2.7			"	87	6.9		
"	61	3			"	88	7.2		
"	61	2.3			"	88	8		
"	61	2.9			"	89	8.3		
"	62	2.2			"	89	7.5		
"	63	2.6			"	90	7.5		
"	63	3.1			"	90	7.6		
"	64	3.3			"	91	7.6		
"	65	3.1			"	92	8.1		
"	67	4.9			"	92	8.8		
"	67	3.9			"	92	7.9		
"	69	3.8			"	92	8.6		
"	69	4.2			"	92	5.5		
"	70	3.6			"	93	7.7		
"	70	4.2			"	93	8.5		
"	70	4.2			"	94	8.8		
"	70	3.5			"	94	9.5		
"	71	3.8			"	95	9.8		
"	71	4.2			"	95	8.8		
"	72	4.4			"	95	9.4		
"	72	4.6			"	95	8.6		
"	73	4.9			"	96	8.1		
"	74	5.3			"	96	9.7		
"	74	4.5			"	97	9.6		
"	74	5			"	97	10.2		
"	74	4.6			"	97	9.3		
"	75	5.8			"	98	10.1		
"	75	5.6			"	98	9.9		
"	75	4.5			"	98	9.9		
"	75	4.7			"	98	9.7		
"	75	4.9			"	98	9.6		
"	75	4.4			"	98	10.5		
"	75	5.1			"	99	9.3		
"	76	4.5			"	100	11	missing end of caudal	
"	76	4.9			"	100	10.6		
"	76	5.1			"	100	10.2		
"	76	4.9			"	101	10.7		
"	77	5.4			"	101	11.5		
"	78	5.3			"	101	10.1		
"	78	5.1			"	101	9.7		
"	79	4.7			"	101	?		
"	79	5.8			"	102	12.4		
"	79	5.8			"	103	11.2		
"	79	5.8			"	104	10.1		
"	80	5.6			"	104	9.8		
"	81	5.8			"	104	11		
"	82	6.3			"	108	12.9		

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
June 23/97	112	14.2		cut in side	June 24/97	90	7.7		
"	114	14.3			"	91	8.8		
"	115	14.2			"	91	8.4		
June 24/97	33	0.3			"	94	8.4		
"	44	1.3			"	94	10.2		
"	62	1.5	33971-1		"	94	9.1		
"	63	3.1			"	94	8.4		
"	64	3			"	94	8.7		
"	66	3.6			"	95	8.8		
"	66	3.3			"	95	9.3		
"	68	3.3			"	96	9.1		
"	68	3			"	97	9.2		
"	68	3.5			"	98	9.8		
"	69	3.8			"	99	10.2		
"	70	3.7			"	102	9.8		
"	71	4.2			"	102	10.4		
"	71	4.3			"	103	10.7		
"	71	3.5			"	104	12.2		
"	71	3.8			"	104	12.7		
"	71	3.9			"	105	12.2		
"	72	4.4			"	105	12.5		
"	72	4.4			"	108	12.7		
"	72	4.3			"	120	16.3		
"	72	4			June 29/97	46	1.1		no scales
"	73	4.5			"	47	1.2		no scales
"	73	5.1			"	48	1.2	33971-2	
"	73	4.7			"	50	1.4	33971-6	
"	73	4.5			"	52	1.6	33971-4	
"	74	4.3			"	54	1.7	33971-5	
"	74	3.7			"	58	2.1	33971-3	
"	74	4.6			"	58	2.2		no scales
"	75	5.4			"	60	2.4		
"	76	4.5			"	61	2.5		
"	76	5.1			"	62	2.9		mort
"	77	4.8			"	62	2.8		
"	77	4.7			"	63	3		
"	77	5.2			"	67	3.3		
"	79	5.7			"	68	3.8		
"	79	6.1			"	69	4.2		
"	79	5.6			"	70	4.2		
"	81	6.3			"	71	3.9		
"	82	6.3			"	71	4.3		
"	82	5.8			"	71	4.2		
"	82	6.2			"	73	5.1		
"	83	6.4			"	73	4.3		
"	84	5.8			"	73	4.3		
"	84	6.8			"	73	4.9		mort
"	85	6.7			"	74	4.4		
"	86	6.9			"	74	4.8		
"	87	7.9			"	74	4.3		
"	88	7.4			"	74	5.4		mort
"	89	8.4			"	74	5.2		

Date	Fork Length (mm)	Weight (g)	Scale #	Comments	Date	Fork Length (mm)	Weight (g)	Scale #	Comments
	78	6							
	80	6.1							
	80	6.7		mort					
	81	6.1							
	83	6.3							
	83	7.1							
	83	7							
	85	8.3		mort					
	87	8							
	91	8.9							
	93	8.9							
	98	10							

Appendix 2. Length data for all other species captured in Toboggan Creek, 1997

Date	Species	Fork Length (mm)	Weight (g)	Comments	Date	Species	Fork Length (mm)	Weight (g)	Comments
May 7/97	CH	81	6.1		June 18/97	RB	113		
"	CH	94	9.2		"	RB	108		
"	CH	83	6		"	RB	108	12.9	
"	CH	81	5.3		June 20/97	RB	160		
"	CH	86	6.5		"	RB	148		
May 9/97	RB	88			"	RB	141		
May 13/97	RB	97			"	RB	113		
"		158			"	RB	114		
May 20/97	RB	78			"	RB	127		
May 22/97	CH	92	10.1	Mort	"	RB	108		
"	CH	99	10.9		"	RB	111		
"					"	RB	114		
"	RB	125			"	RB	108		
"	RB	59			"	RB	83		
"	RB	160			"	RB	153		
"					June 23/97	RB	98		
"	DV	112			"	RB	110		
May 23/97	RB	115			"	RB	93		
"	RB	98	10.4		"	RB	95		
"	RB	109	14.9		"	RB	132		
"	RB	112			"	RB	110		
"	RB	162			"	RB	100		
May 24/97	RB	148	31.2		"	RB	95		
"	RB	116	18.7		"	RB	110		
"	RB	94	9.2		"	RB	114		
"	RB	98	10.1		"	RB	105		
"	RB	101	9.9		"	RB	100		
"	RB	96	9.8		"	RB	105		
May 28/97	RB	109			"	RB	109		
"	RB	102			"	RB	113		
"	RB	116			"	RB	119		
"	RB	118			"	RB	125		
"	RB	124			"	RB	103		
"	RB	123			"	RB	103		
"	RB	157			"	RB	110		
May 29/97	RB(Mort)	94			"	RB	102		
"	CT	143			"	RB	103		
June 3/97	CT	114			"	RB	128		
June 4/97	CT	112	15.6		"	RB	112		
"	RB	98	10.6		"	RB	134		
"	RB	158			"	RB	104		
"	RB	96			"	RB	152		
"	RB	116			"	RB	132		
June 11/9	RB	94			"	RB	105		
"	RB	92	9		"	RB	111		
"	RB	99	10.3		"	RB	125		
"	RB	62			"	RB	109		
"	DV	171	49		"	RB	110		
June 15/9	RB	94			"	RB	100		
"	RB	96			"	RB	121		
"	RB	115			"	RB	109		
June 18/9	RB	114			June 24/97	RB	112		
"	RB	128			"	RB	138		

Date	Species	Fork Length (mm)	Weight (g)	Comments	Date	Species	Fork Length (mm)	Weight (g)	Comments
June 24/9	RB	128							
"	RB	101							
"	RB	113							
"	RB	106							
"	RB	114							
"	RB	127							
"	RB	98							
"	RB	101							
"	RB	117							
"	RB	114							
"	RB	128							
"	RB	98							
"	RB	117							
"	RB	57							
"	RB	98							
"	RB	113							
"	RB	108							
"	RB	96							
"	RB	114							
"	RB	113							
"	RB	108							
"	RB	106							
"	RB	98							
"	RB	128							
June 29/9	RB	113							
"	RB	115							
"	RB	118							
"	RB	102							
"	RB	94							
"	RB	122							
"	RB	104							
"	RB	121							
"	RB	116							
"	RB	114							
"	RB	121							
"	RB	126							
"	RB	108							
"	RB	103							
"	RB	95							
"	RB	124							
"	RB	119							

Appendix 3. Field Data Sheets For All Fyke Trap Settings Toboggan Creek, 1997

Toboggan Creek Smolt Sampling 1997	
Date/Time: 1030 May 6 → 1030 May 7	Crew: MJ, RS
Water Temp: 7.5°C	Air Temp: 13°C
Precipitation: Trace	Water Level: Low (Mod) High
Trap Condition: Excellent, no plugging/damage	
Trap Fishing Performance: (Good) (Fair) Poor	
Comments: Ø morts, trap positioned on location receiving majority of discharge, bottom of opening ~ 6" off substrate.	
No trap efficiency due to fish fence being dropped. No explanation why no RB caught. Funnel thru take not used.	

May 6, 1030 O_2 = 11.8 ppM

pH = 8.2

conductivity = 71.7 µS/cm

cloud cover = 50%

Height from substrate to bottom of log = 1.75 m

distance from bottom of log to water surface = 25 cm } H_2O depth = 100 cm.

May 6, 1400 - cleaned trap

- 8°C H_2O temp

H_2O depth = 98 cm.

Toboggan Creek Smolt Sampling 1998	
Date/Time: May 8, 0900 → May 9, 0915	Crew: MJ, BS
Water Temp: 5.5 °C	Air Temp: 9°C
Precipitation: Ø	Water Level: Low (Mod) High
Trap Condition: excellent, no tears, no plugging	
Trap Fishing Performance: (Good) Fair Poor	
Comments: Ø morts, good position, opening ~ 6" off substrate	
No trap efficiency due to fence being dropped	
aluminum ↓ Funnel intake self-working very well, no debris in narrow part of tube.	

May 8 1000, high cloud, sunny breaks
Air temp = 11°C
H2O temp = 5.5°C
pH = 8.5
Conductivity = 72.5 MS/cm
turbidity = 50 cm
water level = 97 cm

1930 . cloudy
Air temp : 8°C
H2O Height : 96 cm.
Turbidity : 50 cm.

May 9, 0915, sunny, 10% cloud cover,
Air temp : 9°C
water temp : 5°C
water height : 92.6 cm.
turbidity : 45 cm.

Toboggan Creek Smolt Sampling 1997	
Date/Time: May 12, 0915 -> May 13, 10:00	Crew: MJ, RS
Water Temp: 5.5°C	Air Temp: ~
Precipitation: Ø	Water Level: Low (Mod) (High)
Trap Condition: Poor - 2 large tears (~45cm each) along D/S left side of net.	
Trap Fishing Performance: Good Fair (Poor)	
Comments: photos 5, 6, 7	

- placed 45lb rock on front of trap to lower net in water column.
- trap set to intercept main flow, excellent discharge into trap box
- Removed rock due to high flows @ 21:00, no tears, no plugs, intercepting approx 35% of main discharge, zipper blown out - repaired c̄ zap straps
- May 13, 1000, 2 lg. tears on D/S left side, repaired c̄ twine

WX - sunny, hot, light winds.

May 12, 0915

Air temp: 14°C
H2O temp: 5.5°C
H2O height: 100 cm.
pH: 8.3
cond: 65.5 uS/cm.
turbidity: 45 cm.

May 12, 21:00

Air temp: 14°C
H2O temp: 8.5°C
H2O height: 107 cm.
Turbidity: 15 cm.

observed hatchery out flow for 10 mins -
Saw no fish - hatchery gates open today.

May 13, 10:00

Air temp: 18°C
H2O temp: 6°C
H2O height: 110.5 cm
Turbidity: 17 cm.

trap in poor condition 2 tears (see above) repaired c̄ twine

WX - sunny, hot, light winds

3 CO
2 RB

1 lamprey

Toboggan Creek Smolt Sampling 1997	
Date/Time: May 14 / 21:30	Crew: GT, RS
Water Temp: 8° C	Air Temp: 15°C
Precipitation: Ø, 90% Cloud cover	Water Level: 125.4 cm. Low Mod (High)
Trap Condition: not fished due to extremely high water levels	
Trap Fishing Performance: Good Fair Poor N/A	
Comments:	
Photo #10	UV: warm, showers over Hudson Bay Mtn
turbidity: 14cm	
pH : 9.1	
Conductivity: 51.1 µS/cm	
water colour: brown.	

21:45 -> 21:55

observed out flows from hatchery for 10 mins, saw 3 fish.

Toboggan Creek Smolt Sampling 1997	
Date/Time: Thursday, May 15 / 21:15	Crew: M.J.
Water Temp: 7° C	Air Temp: 14 °C
Precipitation: trace amounts	Water Level: 126 cm. Low Mod (High)
Trap Condition: not fished due to extremely high flows	
Trap Fishing Performance: Good Fair Poor N/A	
Comments:	
photo # 11 WX: cloudy, 100% cloud cover, Moderate wind.	
turbidity: 13 cm.	
pH : 8.5	
conductivity: 52.5 µS/cm	
water colour: Brown.	

21:45 -> 21:55

Observed out flow from hatchery, saw 9 fish.

Toboggan Creek Smolt Sampling 1997

Date/Time: 1130 May 19 -> 0900 May 20	Crew: RS, MJ, GT
Water Temp: 7 -> 4.5	Air Temp: 16° -> 8°
Precipitation: Ø	Water Level: Low (Mod) High

Trap Condition:

pool - one 30cm tear, one 20 cm tear, several smaller tears upto 10 cm. long.

Trap Fishing Performance: Good Fair (Poor)

Comments:

Tears are along bottom panel of net - looks like abrasion damage. Fixed with twine, took net off upstream end + cleaned out debris, some sticks & branches in a plug at the entrance to the funnel. - plug would not impede fish movement.

May 19, 11:30

Set trap

Air temp : 16°C
H_2O temp : 7°C
H_2O height : 105 cm.
pH : 8.6
cond : 50.0 µS/cm
Turb : 46 cm.
Photo 12

trap in main flow, excellent catch efficiency, relatively high flow.

WX 100% cloud cover, high cloud.

May 19, 21:00

Air temp : 13°C
H_2O temp : 7°C
pH : 8.6
Turbidity : 45 cm.
Conductivity : 59.0 µS/cm
H_2O height : 103 cm.

trap in main flow, excellent efficiency, very little clogging.

May 20 09:00
Air temp : 8°C
H_2O temp : 4.5°
Turbidity : 66 cm.
H_2O height : 97 cm.

trap in main flow, excellent position, several tears in bottom panel - repaired with twine, small amount of debris at entrance to funnel.

WX: light wind, cool, 98% cloud cover.

1 wild coho smolt, 18 wild coho, 2 hatchery coho smolts, 1 hatchery coho, 1 rainbow

+ 1 CO net morts
2 CO net morts
1 CH net mort.

8 CO mort
2 CO moribund 1 CO moribund
3 RB

Toboggan Creek Smolt Sampling 1997

Date/Time: 17:00 May 21 -> 08:30 May 22	Crew: GT, MJ
Water Temp: 8.0°C -> 5.0°C	Air Temp: 12°C -> 9°C
Precipitation: Ø	Water Level: Low (Mod) High

Trap Condition:

excellent condition, intercepting majority of main flow, no plug try, 2 small holes

Trap Fishing Performance: (Good) Fair Poor

Comments:

Hatchery Count: 22:10 - 22:20 33 fish observed, full moon.

17:00 May 21

cloudy, Mod winds, cool, 95% cloud cover

Air temp : 13°C Cond : 71.7 µS/cm
H_2O temp : 8.0°C pH : 8.6
H_2O height : 91 cm. Turb : 80 cm

H_2O colour : light brown/green.

Photo 13

Set trap, Excellent location, intercepting main flow, used rock to weigh down front end, used rocks behind plywood in trap to increase flow through the trap.

21:40 May 21

WX: clear, calm, cool

Air temp: 5.5°C H_2O temp: 7°C

checked trap, fishing well, cleared small amounts of sticks + debris from

08:30 May 22

Sunny, light breeze, cool, 0% cloud cover, frost in A.M.

Air temp: 9°C H_2O temp: 5°C
Turbidity: 73 cm. H_2O height: 88 cm.

H_2O colour: light brown/green

Trap fishing well intercepting ~ 3/4 main flow, good flow through trap.

7 morts in net - 4 CO, 2 CO, 1 CH

7-8 morts behind plywood

28 CO, 11 CO, 1 CH, 3 RB, 1 PU

8 CO Morts, 1 CO moribund, 4 CO Net Morts
1 CO mort, 2 CO moribund, 2 CO net Morts
1 CH mort

5760.

Toboggan Creek Smolt Sampling 1997		
Date/Time: 16:20 May 22 -> 09:00 May 23		Crew: MJ, GT, RS
Water Temp:	Air Temp:	
Precipitation: Ø	Water Level: Low (Mod) High	
Trap Condition: excellent - no plugs, no tears		
Trap Fishing Performance: (Good) Fair Poor — excellent flow into trap box.		
Comments: used lg. rock to weigh down front end of trap to increase volume of H_2O fished, took rear wheels off to increase flow into holding box.		

16:20 May 22 - set trap

H_2O temp : 9.5°C
Air temp : 18°C
H_2O height : 90 cm.
Turb : 86 cm.
Cond : 70.4 µS/cm.
pH : 8.8

H_2O colour : light brown/green.

WX : Sunny, 30% cloud cover, light breeze, warm.

Photo #14

Set trap in excellent location, intercepting 40% of main flow, used rock on front end

2155 May 22 - checked trap

H_2O temp : 9°C Air temp : 9°C
H_2O height : 92.5 cm. Turb : 75 cm.
trap fishing well - no plugs, no tears
removed rear wheels - increased flow

22:31 -> 22:41 May 22

observed 19 fish leaving hatchery sluice.

09:00 May 23

H_2O temp : 5.5°C
Air temp : 13.0°C
H_2O height : 83.5
H_2O height = 88.5 cm
Turb : 87 cm.
pH : 8.6

H_2O colour : light brown/green.

excellent condition - no tears, no plugs

WX : Sunny, warm, 0% cloud cover, light wi[nd]

58 wild coho (2 net morts, 1 moribund)
5 RB.

Toboggan Creek Smolt Sampling 1998

Date/Time: 16:30 May 23 -> 09:00 May 24	Crew: MS, GT, RS
Water Temp:	Air Temp:
Precipitation: Ø	Water Level: (Low) (Mod) High

Trap Condition:

poor: 1y 40 cm tear in bottom panel, 21 CO morts, 1CH mort., significant scale loss

Trap Fishing Performance: Good Fair (Poor)

Comments: funnel arrangement not working very well - replace with 1996 net

many fish measured had significant scale loss.

16:30 May 23 MS, GT set trap

wx: Sunny, clear, calm, warm

Air temp: 18°C Turb: 84 cm.
H_2O temp: 10.5°C pH: 8.6
H_2O height: 135-36=88cm Cond: 72.6 µS/cm
H_2O colour: light brown/green.

Set trap in main flow, excellent location, intercepting 90% main flow, used rocks to weigh down front end.

Photos 15, 16.

21:20 May 23 MS, RS

Air temp: 11°C Turb: 84 cm.
H_2O temp: 9.5°C H_2O height: 93 cm.
H_2O colour: light brown/green.

21:35 -> 21:45 2 fish observed @ head of

09:00 May 24, MS, RS trap retrieval

Air temp: 16°C Turb: 78cm
H_2O temp: 7°C H_2O height: 93cm
wx: Sunny, warm, 0% cloud cover, very light breeze

trap fishing poorly, 1y 40cm tear in bottom panel, many morts (21)

48 wild coho (15 morts)
16 hatchery coho (6 morts)
6 RB.

many morts were found in net, caught in back eddies.

Toboggan Creek Smolt Sampling 1997	
Date/Time: 17:00 May 26	Crew: MJ, GT
Water Temp: 10.0 °C	Air Temp: 10.5 °C
Precipitation: Ø	Water Level: Low (Mod) High
Trap Condition: N/A - not fished	
Trap Fishing Performance: Good Fair Poor N/A	
Comments: installed net weir on 1446 on fyke, set trap in excellent location intercepting ~60% main flow, excellent flow thru trap. Randy from Hatchery came by + recommended we pull trap due to flooding from blown beaver dams @ Toboggan lk - pulled our trap ASAP to avoid damage by Alleged flood. Wx: Sunny 50% cloud cover, warm.	

water level quite high - 104 cm., dirty and turbid - 57 cm.

pH: 8.7
Cond: 57.4 µS/cm

Toboggan Creek Smolt Sampling 1997	
Date/Time: 17:00 May 27 -> 09:00 May 28	Crew: MT, GT
Water Temp:	Air Temp:
Precipitation: Showers on Hudson Bay Mtn.	Water Level: Low ~~Mod~~ (High)
Trap Condition: Good - Small mesh plugged ε debris, 2 5cm holes, good flow into trap	
Trap Fishing Performance: (Good) (Fair) Poor	
Comments:	

15:00 May 26 Set trap

Wx: Sunny, 50% cloud cover, warm

Air temp: 21°C Cond: 61.6 µS/cm

H_2O temp: 9.5°C Turb: 48cm.

pH: 7.4 H_2O Height: 104 cm.

H_2O colour: Brown, dirty.

Used net from main on fyke, good position intercepting ~ 50% flow - good flow into trap. photo #17

21:15 May 27 Check Trap

Wx: 80% cloud cover, showers on Hudson Bay Mtn.

Air temp: 14°C H_2O temp: 8°C

Turb: 41cm. H_2O height: 108cm.

H_2O colour; light brown.

Good flow into trap - fyke mesh clogged ε small debris - cleared it out

22:26 -> 22:36 May 27

counted 8 fish out of hatchery sluice

09:00 May 28 Trap retrieval

Wx: 80% cloud cover, sunny periods, light breeze.

Air temp: 17°C Turbidity: 52 cm.

H_2O temp: 8°C H_2O height = 108cm.

H_2O colour: brownish green.

Trap performance excellent - only 2 5cm holes in net, debris plugging small mesh, no plugs in pipe, excellent flow into trap box.

728 hatchery coho (1 mort)
367 wild coho (10 morts)
7 RB
3 lamprey

Toboggan Creek Smolt Sampling 1997

Date/Time: 1530 May 28 - 0900 May 29	Crew: MJ, GT, RS
Water Temp:	Air Temp:
Precipitation: light rain AM of May 29	Water Level: Low (Mod) (High)
Trap Condition: Pool	
Trap Fishing Performance: Good (Fair) (Poor)	
Comments: Intake to trap completely blocked with debris - impassible to fish, many dead fish in net - gilled, 4 tears in net 2 @ 10cm. 1 @ 15cm, 1 @ 45cm.	

1530 May 28 RS, MJ

Air temp : 20°C
H2O temp : 8.6
pH : 7.6
H2O height : 110 cm
turb : 32 cm
cond : 61.1 µS/cm

WX : 60% cloud cover, warm.

Photo #18
Good position, intercepting ~ 40% main flow

22:15 RS, GT

Air temp : 14.5°C
H2O temp : 8°C
H2O level : 111.5 cm

excellent flow into trap, water flowing above board, took trap to shore to clean debris from net and screen.

0900 May 29 Trap retrieval MJ, GT

WX: 100% cloud cover, light rain, warm.
Air temp : 12.5°C
H2O temp : 6.5°C
H2O height : 106.5
Turb: 43cm
H2O colour: brown, dirty.

See comments above for trap performance.

379 wild Coho (79 morts)

627 hatchery Coho (143 morts)

18 RB (1 mort)

1 CT (mort).

Toboggan Creek Smolt Sampling 1997	
Date/Time: 1700 May 29 → 0845 May 30	Crew: MS, GT, RS
Water Temp:	Air Temp:
Precipitation: rain evening of 29th	Water Level: Low (Mod) High
Trap Condition: excellent - fine mesh plugged c small debris, no tears	
Trap Fishing Performance: (Good) (Fair) Poor	
Comments:	

17:00 May 29 Trap set, MS, RS

Wx: 100% cloud cover, light rain all day

Air temp : 17.0°C — pH : 7.6

H_2O temp : 8.0°C — cond : 60.0 uS/cm

H_2O height : 106.5 cm — Turb : 45 cm

H_2O colour : light brown, Photo # 19

set trap in good position on DS right hand side of main flow - intercepting ~ 40% main flow.

22:30 Trap check RS, GT

Wx: 95% cloud cover, raining since trap set.

Air temp : 11°C, H_2O temp : 7°C

Good flow into trap, cleaned debris from net, few fish in trap, lifted plywood up several inches to increase flow thru trap.

03:30 May 30 MS, RS Trap check.

cleaned small debris caught in fine mesh, retrieved 178 hatchery coho and 1 trout

fine mesh plugged, 2 smolts pinned against coarse mesh.

04:00 May 30 MS, GT Trap retrieval

Air temp : 11.5°C — H_2O height : 108 cm.

H_2O temp : 6.5°C — Turbidity : 61.0 cm

Wx: 60% cloud cover, sunny, warm, calm.

Trap in excellent condition, good flow thru trap, no tears, small mesh plugged c small debris

Coho hatchery : 193 (3 smolts) } 309 coho.

Wild coho : 116 (5 smolts) }

RB : 6 (1 smolt)

CT = 3

Toboggan Creek Smolt Sampling 1997	
Date/Time: 09:00 June 2 -> 09:00 June 3	Crew: MJ, TJ
Water Temp:	Air Temp:
Precipitation: Ø	Water Level: Low (Mod) High
Trap Condition: fair -> good some plugging of fine mesh & debris, no tears	
Trap Fishing Performance: (Good) (Fair) Poor	

Comments: 09:00 June 2 MJ, TJ - Trap set.

Wx: 95% cloud cover, light drizzle, no wind

Air temp: 12.5°C H_2O temp: 7°C pH: 7.6 conductivity: 62.0 µS/cm

H_2O height: 125 - 23.5 = 101.5 Turbidity: 64.5 cm H_2O colour: light brown.

Set trap in good location, intercepting 80% main flow, excellent flow into trap box, used rock to weigh down front end

15:45 June 2, MJ, TJ - check trap

Wx: 60% cloud cover, no wind, Air temp: 17.5°C, H_2O temp: 9°C, Turbidity: 58 cm

H_2O colour: brownish green

Good flow into box, some debris caught in net, cleared debris in net + box. no tears in net.

22:35 June 2 MJ, TJ - Trap check

Wx: 40% cloud cover, moderate wind; Air temp: 13.5°C, H_2O temp: 9°C

excellent flow into box - little debris in net - fine mesh moderately plugged, no tears. Cleaned net and screen above and below ply wood - only 2 fish observed.

05:35 June 3 MJ, TJ, check trap

Wx: clear, calm, light breeze; Air temp: 9°C, H_2O temp: 7.5°C

excellent flow into box, very little debris in net. Cleaned net and screen on box, fishing well

~ 150 fish observed.

09:00 June 3 MJ, TJ retrieve trap

Wx: 95% cloud cover, drizzly, no wind; Air temp @ 13:00 20°C, H_2O temp @ 13:00: 9°C, H_2O height: 98cm.

Turbidity: 72 cm, H_2O colour: greenish brown.

-> over

Toboggan Creek Smolt Sampling 1997	
Date/Time: 17:00 June 3 → 07:00 June 4	Crew: MS, TS
Water Temp:	Air Temp:
Precipitation:	Water Level: Low Mod High →
Trap Condition: good at all observation times - trap pulled @ 07:00 by hatchery staff.	
Trap Fishing Performance: Good Fair Poor	
Comments: 17:00 June 3 MS, TS Trap set. wx: 100% cloud cover, no rain; Air temp: 14°C; H_2O temp: 9.5°C; pH: 7.6; conductivity: 64.4 µS/c turbidity: 74cm; H_2O height: 9cm.; H_2O colour: brownish green Set trap to intercept ~20% main flow, trap box in slower water. Anchored dense netting over top of plywood to prevent fish being trapped between plywood + screen. Good flow into trap box.	

22:45 June 3 MS, TS check trap.

wx: [illegible]; Air temp: 12°C, H_2O temp: 8°C

trap fishing well, no plugs, no tears, minimal net debris, good flow into box. Cleaned net.

03:20 June 4 MS, TS check trap

wx: light rain, fog

Air temp: 11°C H_2O temp: 8°C. creek level up ~3 cm from last check. Some debris in fine mesh, fishing well, good flow into box, no tears, few fish seen in box

—ovs.

Toboggan Creek Smolt Sampling 1997	
Date/Time: 0:00 June 11 → 17:30 June 11	Crew: GT, RS
Water Temp: 8°C	Air Temp: 14°C
Precipitation: NIL	Water Level: Low (Mod) High
Trap Condition: good at all times checked.	
Trap Fishing Performance: Good (Fair) Poor	
Comments: 0:00hrs, June 11, Trap set, GT, RS Wx: No rain at time of setting, May have been showers on Hudson's Bay Mt. Warm, no wind, 100% cloud cover. H_2O ht: 92cm, pH: 7.4, cond: 69.4, Turb: No reading due to dark, Air temp: 14°C, H_2O temp 08°C. Trap intercepting 25-30% of main flow, installed plywood + dropped netting over top of ~~netting~~ plywood. Trap set w/ no extension on cable. Steady, v. good flow through net	

01:15 hrs - trap check - v. good flow through net into trap. Several fish observed in trap.

Total Fished - RB - 4, DV - 1, Wild Coho - 85 (2 morts), Hatchery coho - 37 (1 mort

June 11 17:30 hrs Trap check (Not Set)

Wx: 65% cloud cover, sunny, very warm.

H_2O ht: 98cm

Turb: 40cm

cond. 66.

Water is brownish-green, Net checked, in excellent condition, no tears + no debris in net.

Toboggan Creek Smolt Sampling 1997	
Date/Time: 00:30-03:30 June 15/97	Crew: MJ/GT/RS
Water Temp: 8°C	Air Temp: 11°C
Precipitation: showers, cloudy. During day cloudy w showers on Hudson's Bay Mt.	Water Level: Low Mod (High)
Trap Condition: Good- no tears or rips	
Trap Fishing Performance: Good (Fair) Poor	
Comments: H_2O ht.- 103 @ 00:05, 104 @ 03:30	
pH: 7.6, Turb - too dark, Cond. 60.9 mS	
Air temp: 11°C, H_2O temp 8°C	
Trap set: Intercepting 25-30% of main flow. Good flow into tank- some pulsing. No tears or rips during set time. No plugging.	

RB- 115
DV- —
CO (Hatchery)- 23
CO (Wild)- 93
Lamprey- 2

Toboggan Creek Smolt Sampling 1998	
Date/Time: Wed June 18 00:15hrs - 04:00	Crew: RS/ ML
Water Temp: 9.8°C	Air Temp:
Precipitation:	Water Level: Low Mod (High)
Trap Condition:	
Trap Fishing Performance: Good (Fair) Poor	

Comments: Trap was set in 1/2 main flow. Trap pulled @ 04:00 hrs.

H_2O ht: 102 ; Temp: 9.8°C , Cond: 54

pH: 7.8 Turb: ~45cm, fairly clear water

~9 hatchery coho caught.

Toboggan Creek Smolt Sampling 1998	
Date/Time: June 20th 00:005 - 04:00 hrs	Crew: RS/ML
Water Temp: 9.0	Air Temp:
Precipitation:	Water Level: Low (Mod) (High)
Trap Condition:	
Trap Fishing Performance: (Good) Fair Poor	

Comments: set trap in excellent Location, high performance, catching majority of flow, Full moon.

pH: 7.9 ; cond: 59 µS/cm , Turb: ~80cm ; H_2O ht: 97.5cm

8 hatchery fish caught.

Toboggan Creek Smolt Sampling 1997

Date/Time: June 23/97 00:00 - 03:25

Crew: TJ/GT

Water Temp: 10°C

Air Temp: 13°C

Precipitation: black rain clouds drizzle, 70% cloud cover.

Water Level: Low (Mod) High

Trap Condition: good ~ no tears or plugs

Trap Fishing Performance: (Good) Fair Poor

Comments: Trap set approx. 11:45pm (June 22), good flow into trap.
conduct: 69.2, Turb: ~35cm (est. in trap)
38 RB, 12 hatchery cohos. Trap performance excellent - catching approx. 40% of main flow. Excellent flow into tank. No tears or plugs in net.

Toboggan Creek Smolt Sampling 1997

Date/Time: June 24/97 00:00-

Crew: TJ/MJ

Water Temp: 12°C

Air Temp: 14°C

Precipitation: 25% cloud cover, warm + dry

Water Level: Low Mod (High)

Trap Condition:

Trap Fishing Performance: (Good) Fair Poor

Comments: Trap set @ 23:50 (June 23/97) by RS/TJ/MJ

Turbn 30cm (est in trap w/ headlamp), pH - 7.7, Cond: 65.3

~Good flow into trap

26 RB, 6 Lampreys

Toboggan Creek Smolt Sampling 1997	
Date/Time: June 29/97 00:00	Crew: MJ/RS
Water Temp: 11°C	Air Temp: 19°C
Precipitation: None, warm temp.	Water Level: Low (Mod) High
Trap Condition: good, no plugs, no tears.	
Trap Fishing Performance: (Good) Fair Poor	
Comments: Trap set by 00:03, intercepting 2/3 of main flow, good flow into trap box, some moderate pulsing, little debris in H_2O, H_2O level moderate, no plugs, no tears. pH: 7.6, cond: 56.8 µS, Turb: 80cm. Pulled trap @ 04:00 hrs, Trap performance was excellent. 42 wild coho, 17 RB, 6 marks	