Upper Bulkley River Coho Assessment Fence Program Report for 2001

Prepared for Brian Pearce
Strategic Stock Enhancement Program
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By

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1.0 Executive Summary

The Upper Bulkley River Coho Assessment Fence was installed on August 20'th and 21'st, 2001. Fence operation commenced the evening of August 21'st, 2001 and fence operations continued until October 31'st, 2001.

The Upper Bulkley River Coho Assessment Fence project was funded by the Dept. of Fisheries and Oceans Strategic Stock Enhancement Program. The purpose of the fence is to capture as close to 100% of the upstream migrating coho spawners as possible and to identify coho as to mark type and sex. In the 2001 coho return, there were three types of hatchery marked coho returning i.e. Adipose/CWT, Adipose/Right Maxillary/CWT and Right Ventral clipped coho. In addition, the fence is used to capture adults for broodstock for the Toboggan Cr. Hatchery for Strategic Enhancement of Upper Bulkley River coho.

Approximately 38.2 percent of the total coho count at the fence were adipose/CWT coho. These were coho that were released as fry into Buck Creek and should be predominately 3 year old coho from the 1998 brood year. Approximately 24.5 percent of the total coho count at the fence were Adipose/Right Maxillary/CWT and these should be three year old coho released as smolts into Buck Creek. About 2.1 percent were Right Ventral clipped coho and these were coho that were surplus to the coded wire tagged group released as smolts from the 1998 brood year. About 35.2 percent of the fence count represent wild coho i.e. un-enhanced coho.

The timing for all marked(hatchery) and wild coho was very similar with the peak of the run occurring between September 24'th and 26'th, 2001.

The fence operated well even in low water conditions, which predominated throughout the operation of the fence.

Acknowledgements

The Upper Bulkley River Coho Assessment Fence was designed and constructed by Ian Ross and Sam McNeil. Thanks go to Sam and Ian for their efforts and for their continued support of the fence operations.

Thanks go to Bridie O'Brien, Jordan Muldoe, Alan Korolik, Trace Joe, Jim and Tracy De La Mare and Elaine Hougen for their hard work during fence installation. The primary fence operations crew consisted of Jim and Tracy De La Mare, Elaine Hougen and Alan Korolik. Thanks go to the crew for their hard work and enthusiasm especially during those times where the weather was less than pleasant to work in.

Thanks also go to Georgie Watts, Northwest Community College in Houston, for making her Youth Program participants available to help at the fence during the beach seining sessions. The assistance from the youth participating in that program was invaluable.

Thanks to Mathew Wheatley, a participant in the Work Experience Program at the Houston Secondary School for assisting with fence operations and beach seining.

The fence was de-mobilized by Jim and Tracy De La Mare, Trace Joe, Bridie O'Brien, Jordan Muldoe and Elaine Hougen. Thanks go to those folks who lifted, carted panels, "A" frames and other paraphenalia. This was a difficult job and was well done by the fence de-mobilization crew.

Thanks also go to Brian Pearce for continuing to support this project through Strategic Stock Enhancement Program funds. Thanks to Don Bailey for assisting with operations and sampling strategies and for very helpful editing of this report.

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2.0 Background Information

The Upper Bulkley River Coho Assessment Fence is located approximately 6 kms upstream from the confluence of the Morice and Upper Bulkley Rivers. The DFO Strategic Stock Enhancement Program funded design and construction of the UBR fence in 2000 as well as operation of the fence in 2000 and 2001.

The fence is of aluminum construction and consists of a wood surface sill with protruding tabs. A number of "A" frames are bolted into these tabs and the "A" frames are the support structure for the walkway and fence panels. There is a broomstick style, aluminum live trap, which is attached to a modified fence panel. The live trap has a built in "V" shaped lead-in and a locking aluminum lid. The fence spans the width of the Upper Bulkley River therefore effectively blocking upstream migration of coho adults. Coho adults easily accessed the live box via a modified "V" lead-in.

The purpose of the assessment fence is to monitor coho escapement to the Upper Bulkley River by enumerating all coho through the fence and identifying each coho as to sex and mark type. The data on returning adults is utilized in conjunction with data collected in commercial/aboriginal/recreational fisheries to determine a total survival rate on hatchery released coho. In addition, the fence is used to capture adults to be used at the Toboggan Creek Hatchery for Strategic Enhancement of Upper Bulkley River coho.

The 1998 brood year was the first brood year that Upper Bulkley coho became part of the Strategic Stock Enhancement Program (SSE). The SSE program is aimed at preserving stocks at risk of extirpation and the Upper Bulkley River coho stock is a conservation concern. The purpose of the SSE program on Upper Bulkley River coho was to maintain the genetic integrity of that stock by attempting to increase production to the point where the number of spawners returning was increased above the historical low levels of return. This was accomplished using two enhancement strategies comparing the marked returns of uniquely marked release groups. One release group are yearling hatchery smolts and the other group are partially reared fry. This strategy was intended to be replicated for three years however, the program was extended to continue for the 2001 brood year. Although the fry are expected to have a lower survival rate than smolts, it is hoped that natural freshwater selection pressures will produce a more long term genetically fit progeny than the smolt progeny. This year, 2001, was the first year of return for strategically enhanced Upper Bulkley River coho.

An extra 100,000 Upper Bulkley River coho eggs were taken as part of the Toboggan Creek Hatchery program. The resultant fry were coded wire tagged and released as fed fry into under-utilized habitat in Buck Creek, upstream of Bridge #2 on the Buck Creek Forest Service Road but downstream of the impassable falls on Buck Creek. There were 80,440 Adipose/CWT fry released into Buck Creek on August 24, 1999. Size at release was 4 grams.

Approximately 36,485 1998 brood coho were released as Adipose/Right maxillary/CWT smolts. These coho were also released to Buck Creek however, about 24,000 were released to the Buck Creek Release Pond and the remainder were released upstream of the Rotary Screw Trap. Release timing was early May 2000 and coho were released at a size of 12 to 14 grams.

Approximately 5,444 Right Ventral clipped coho were also released as smolts into Buck Creek. These were coho that were too small to CWT or were surplus.

Survival rates will be calculated for the Adipose/CWT and Adipose/Right Maxillary/CWT groups and they will be compared. The viability of the fry release strategy will be determined i.e. are fry releases a successful and acceptable method for strategically increasing coho production in the Upper Bulkley River.

2.1 Fence Operations

The Upper Bulkley River Coho Assessment Fence was installed on August 20'th and 21'st, 2001. (See Appendix 3 for Installation Instructions). Water level was low at time of installation therefore installation of "A" frames required only one person in a dry suit.

This year, fence operations were modified to increase attraction water through the lead-in area to the live trap box. Tabs were welded onto the bottom of both top and bottom panels to create a space for leaf debris to flow through on the bottom of the fence and between the top and bottom panels. The tabs were welded on such that about a two inch gap was left between the bottom panel edge and the fence sill and there was a two inch gap between the top and bottom panels running down the middle (widthwise) of the fence.

Tarps were placed to completely block water flow through all of the bottom panels. This had the effect of pushing all of the leaf debris either under the bottom panel or between the top and bottom panels. This made the fence "self-cleaning" which reduced the amount of labour necessary for debris cleaning.

The tarps also moved the majority of the water flow towards the live trap and through the "V" lead-in. The "V" lead-in was modified by adding a two foot long by three inch wide extension to the end of the aluminum, broomstick lead-in. This made it much more difficult for trapped coho to find the lead-in entry and escape i.e. go back out of the trap.

Also, four by eight foot sheets of ¼ inch plywood were floated from the downstream side of the "V" lead-in. Four sheets of plywood were attached, lengthwise, to create cover for upstream migrating coho from about 75 feet upstream of the old fence sill to the "V" lead-in. The plywood, floating cover, was put right over top of where most of the water flow was going. This worked well in attracting coho towards the fence and into the lead-in area of the trap.

The live trap box was slated for modification for this years fence operations, however, no modifications were made. The live trap box lid opens in two pieces with the upstream lid opening against the water flow and the downstream lid opening with the water flow. Last year, during high water conditions the live trap could not be opened due to the force of the water against the upstream lid piece. Also, the live trap box is well below the level of the fence walkway, making access to the live trap difficult. In times of high water the trap box is submersed, making retrieval of coho impossible. In November, 2001, the live trap box will be modified in preparation for fence operations in the fall of 2002.

Daily fence operations included taking a water level measurement and water temperature from a limnology station. Coho trapped in the live box were enumerated two to three times per day, depending on the numbers of coho entering the live box. A crew person would sort fish from within the live box while a second crew person recorded the data. Coho were enumerated by sex and mark type on a daily basis. Any dorsal fin tagged coho were also recorded by sex, mark type and dorsal fin tag color and number. The dorsal fin tags were removed from the coho (which had been caudal punched at time of dorsal fin tagging) and were submitted to the Stock Assessment Division for quality control on both color and number identification.

Some of the coho were removed and transported to the Toboggan Creek Hatchery. Those coho were used as broodstock for the hatchery program fry versus smolt survival study. Coho that were not removed for broodstock purposes were opercular punched and released upstream of the fence.

As well as trapping coho at the fence, beach seining was conducted in the pool just downstream of the old fence sill. Beach seining was done to determine if the ratio of marked to unmarked coho mirrored the ratio at the fence. In times of very low water, when coho were reluctant to migrate upstream, beach seining was conducted to physically move fish upstream of the fence.

A 150 foot long by 8 foot deep seine net was set from the middle of the old fence sill to about 100 feet downstream of the sill. The net was pursed to river right and coho were sorted from the net. All coho were sorted for sex and mark type, including dorsal fin tags. Any coho to be released upstream of the fence were opercular punched on the right

operculum, then placed in transport bags. The transport bags were then towed in the water to the fence. One top panel was removed from the fence on river right, and the transport bags were gently lifted over the bottom fence panel. A crew person on the upstream side of the fence would then tow the transport bag away from the open panel area and gently release the fish. Beach seining required a minimum of 8 to 9 people.

Due to the modifications made to the fence operations, the fence operated well this year and during times of heavy debris load, operations were far less labour intensive than the in the fall of 2000. There was no high water event during the operation of the fence and so the fence was not breached i.e. there was no opportunity for coho to escape over or around the fence this year.

There was some carcass recovery at the fence. Most of the carcasses recovered from the fence were pre-spawn mortalities. The fence was not in operation long enough to accomplish carcass recovery through the peak spawning time.

The fence was dismantled and moved to the District of Houston storage yard on October 31, 2001. (See Appendix 3 for Dismantling Instructions).

3.0 Results and Discussion

The Upper Bulkley River coho run was quite good in 2001 with a total return to the fence of 2,197 coho. A total of 1,140 female coho and 1,057 male coho were handled at the fence program this year. Therefore, 51.9% of the coho enumerated were females and 48.1% were males.

There were three hatchery mark types returning from the 1998 brood year, Adipose/CWT, Adipose/Right Maxillary/CWT and Right Ventral clipped coho. The 1998 brood Adipose/CWT coho resulted from a fry release of 80,440 coho into Buck Creek. The 1998 brood Adipose/Right Maxillary/CWT coho resulted from a smolt release of 36,485 coho (into Buck Creek) and the Right Ventral clipped coho resulted from a smolt release of 5,444 coho (into Buck Creek).

There was a total of 839 adipose clipped coho, 539 adipose/right maxillary clipped coho, 773 unmarked (wild) coho and 46 right ventral clipped coho enumerated at the fence. (Appendix I)

A total of 72 males were removed for broodstock. Of those males 22 unmarked, 43 adipose and 7 Ad/Right maxillary males were used in egg takes. A number of males were returned to the Upper Bulkley River after egg takes. Four unmarked, 2 adipose and 2 Ad/Right maxillary males were returned to the Upper Bulkley River.

A total of 53 females were used in egg takes. Eighteen unmarked(wild), 19 adipose and 16 Adipose/Right maxillary coho females were used for broodstock. Eight unmarked(wild), 16 adipose and 3 Adipose/Right maxillary coho females were returned to the Upper Bulkley River.

A total of 2,072 coho adults were released upstream of the fence to spawn naturally. Of those 2,072 coho, 1,087 were females and 985 were males. A total of 125 coho were removed for hatchery broodstock. The estimated natural egg deposition in the Upper Bulkley River system, using a mean fecundity of 3,108 eggs per female, is 3,378,396 coho eggs. Mean fecundity was calculated by averaging fecundity for the 1997, 1998 and 1999 brood years. (O'Neill – Toboggan Creek Hatchery Annual Report Feb 2001).

Adipose/CWT Coho

The 839 adipose clipped coho resulted from a fry output of 80,440 fry for a survival to escapement of 1.0% These fry are estimated to have produced a smolt output of between 30,667 and 35,322 smolts (SKR Consultants 2000). The number of smolts migrating downstream in Buck Creek was estimated based on a downstream migration program conducted in the spring of 2000 where number of a marked and unmarked smolts captured in a Rotary Screw Trap were recorded. Based on the trapping efficiency of the Rotary Screw Trap and on a Petersen estimate, the number of smolts migrating downstream was calculated.

Survival to escapement from (a mean of) 32,995 smolts is estimated at 2.54%. There may be two brood years in the return as a small proportion of coho will return as four year old fish. Therefore, actual contribution in the escapement from the 1998 brood fry release cannot be determined until results from tag de-coding and scale reading are complete. This is not a total survival rate as exploitation from commercial/aboriginal/recreational fisheries has not been considered here.

Of the 839 Adipose/CWT coho enumerated at the fence, 424 were females and 415 were males. Therefore, 50.5% of the Ad/CWT coho were females and 49.5% of the Ad/CWT coho were males.

Adipose/Right Maxillary/CWT Coho

A total of 539 coho were enumerated at the fence and resulted from a smolt release of 36,485 smolts. This represents 1.5 % of the released smolts. Data from the Fort Babine Hatchery experiments have shown that the maxillary clip causes an additional mark mortality of 33.4%. Adjusting the survival for this mark mortality increases survival to escapement to 2.2%. This is very similar to the fry release estimated smolt to adult survival of 2.5%. Of those 539 coho adults, 309 or 57.3% were females and 230 or 42.7% were males.

The smolt production was marked with a Right Maxillary clip so that fry release returns could be visually separated from smolt returning coho at the fence. In the absence of a differential mark, fry released coho and smolt released coho will not be able to be enumerated separately at the fence. The only way to differentiate between coho returning from fry releases versus smolt releases will be to collect heads and de-code the coded wire tags. This means that coho must either be sacrificed at the fence for tag de-coding or spawned-out carcasses must be recovered in order to conduct tag de-coding.

Right Ventral Clipped Coho

A total of 46 right ventral clipped coho were enumerated at the fence. This represents 0.84% of the number of smolts that were released. Ventral clipping has also been shown to reduce survival significantly. Of those 46 right ventral clipped coho, 23 or 50% were females and 23 or 50% were males.

The Right Ventral Clipped coho resulted from a release of smolts that were either surplus or too small to tag at the time of coded wire tagging.

Unmarked(Wild) Coho

A total of 773.coho enumerated at the fence were unmarked(wild). Wild smolt output for the Upper Bulkley River system is not known and therefore a simple estimate of survival to the fence based on smolt output is not possible.

Of the 773 unmarked coho enumerated at the fence, 384 or 49.7% were females and 389 or 50.3% were males.

Dorsal Fin Tagged Coho

A number of coho were dorsal fin tagged at the Moricetown Falls in a tag and recovery program conducted by Barry Finnegan of the Stock Assessment Division (Science Branch of DFO) to estimate coho escapement upstream of Moricetown Falls.

A total of 341 dorsal fin tagged coho were captured at the Upper Bulkley River fence and this includes coho that had a caudal clip but had lost the dorsal fin tag. Dorsal fin tagged coho made up 15.5 percent of the total fence count. Total tag recoveries are shown in Table I. The proportions of tag colors are shown in Table I and are shown graphically in Figure V. Tag recoveries by week are shown in Table II and are shown graphically in Figure VI. Daily capture data for dorsal fin tagged coho is shown in Appendix II.

Table I

Total Tag Recoveries at the Upper Bulkley River Coho Fence

Color	No. Tags Recov.	Prop.
Blue	217	0.636
Yellow	8	0.023
White	34	0.100
Pink	12	0.035
Orange	38	0.111
Red	13	0.038
Lost tag	2	0.006
Green	11	0.032
Grey	5	0.015
Purple	1	0.003
TOTAL	341	1.000

Figure I

Table II

Tag Recoveries by Week

Color	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Blue	9	41	48	79	1	16	20	0
Green		0	0	0	0	5	6	0
Grey		0	0	0	0	0	5	0
Orange		4	7	19	0	4	4	0
Pink		2	7	4	0	0	2	0
Purple		0	0	0	0	0	1	0
Red		0	7	6	0	0	0	0
White		10	8	10	0	3	2	1
Yellow	1	2	1	2	0	1	1	0
Lost Tag		1	0	0	0	0	1	0
Totals	**10**	**60**	**78**	**120**	**1**	**29**	**42**	**1**

Figure II : Coho Dorsal Fin Tag Recoveries by Week at the Fence

3.1 Coho Migration Timing

Coho began entering the fence live trap box on August 24'th even though water and discharge levels were low. Peak migration occurred from September 24'th to 26'th with a total of 741 coho migrating through the fence. This represents 33.7% of the total number of coho enumerated through the fence in 2001. Coho migration timing is shown in Figure III.

Peak migration timing in 2001 was similar to peak migration timing in 1998, 1999 and 2000. In 1998 peak timing occurred from about October 27'th to November 3'rd, 1998. Peak timing in 1999 occurred from September 16'th to 23'rd and from October 20'th to 24'th. Peak timing in 2000 occurred from October 15 to 25'th.

The timing of the various marked groups were very similar with peaks occurring at the same times. The timing of all three marked groups is also very similar to the timing of the unmarked (wild) coho enumerated through the fence. (Figures IV and V). Table III shows coho timing by week and mark type. Table IV shows proportions of mark types and unmarked coho by week.

Coho migration peak timing in previous years has coincided with increasing water level and discharge. In 2001, water level and discharge remained constant throughout the run. Water temperature (degrees C) was recorded daily with a maximum of 15 degrees C recorded in August and a minimum temperature of 2.5 degrees C in late October. Coho migration timing, water temperature and water level are shown in Figure X.

The proportion of Adipose clipped coho ranged from 27.3% to 50 % and averaged 38.2 % of the total coho count at the fence. The proportion of Adipose/Right Maxillary clipped coho ranged from 15.8% to 43.6 % and averaged 24.5% of the total count at the fence. The proportion of unmarked (wild) coho ranged from 25% to 40.1% and averaged 35.2% of the total coho count at the fence. (Figure VI). The proportion of Right Ventral clipped coho averaged 2.1% of the total coho count at the fence. Due to the low numbers of Right Ventral clipped coho returning, they have not been included in Figure VI.

3.2 Coho Escapement Comparisons

Coho counts at the Upper Bulkley River fence have been as low as 22 coho enumerated in 1997 to a high of 2,197 coho enumerated at the fence in 2001. Table V and Figure VII show total coho counts at the Upper Bulkley River Fence from 1996 to 2001.

The proportion (percent) of females versus males in the coho count is shown in Figure VIII.

Figure III : UBR Coho Migration Timing : 2001

Figure IV : UBR Coho Migration Timing by Mark Type : 2001

Table III

Upper Bulkley River Coho Returns by Week: 2001

Dates	Week No.	No. Ad	No AdRM	No. RV	No. Unmark
Aug 24-31	1	76	25	3	54
Sep 1-7	2	121	74	5	87
Sep 8-14	3	130	83	9	117
Sep 15-21	4	123	77	6	106
Sep 22-28	5	273	191	16	322
Sep 29-Oc	6	1	1	0	1
Oct 6-12	7	56	33	3	42
Oct 13-19	8	15	24	1	15
Oct 20-26	9	42	30	3	28
Oct 27-31	10	2	1	0	1

Figure V

Table IV

Upper Bulkley River Coho Returns by Week: 2001

Dates	Week No.	No. Ad	No AdRM	No. RV	No. Unmar	Propn Ad	Prop of ADRM	Prop Unmarked
Aug 24-31	1	76	25	3	54	0.481	0.158	0.342
Sep 1-7	2	121	74	5	87	0.422	0.258	0.303
Sep 8-14	3	130	83	9	117	0.383	0.245	0.345
Sep 15-21	4	123	77	6	106	0.394	0.247	0.340
Sep 22-28	5	273	191	16	322	0.340	0.238	0.401
Sep 29-Oc	6	1	1	0	1	0.333	0.333	0.333
Oct 6-12	7	56	33	3	42	0.418	0.246	0.313
Oct 13-19	8	15	24	1	15	0.273	0.436	0.273
Oct 20-26	9	42	30	3	28	0.408	0.291	0.272
Oct 27-31	10	2	1	0	1	0.500	0.250	0.250
Totals		839	539	46	773	0.382	0.245	0.352

Figure VI : UBR Coho - Proportions of Marked Coho

Table V

Upper Bulkley River Coho Assessment Fence : Fence Counts from 1996 to 2001

Year	Total No. Coho	% Fem	% Male	% Hatch	% Wild
1996	170	NA	NA	NA	NA
1997	22	59.1	40.9	63.6	36.4
1998	317	53.6	46.4	69.1	30.9
1999	1073	54.4	45.6	79.8	20.2
2000	167	42.8	57.2	77.7	22.3
2001	2197	51.9	48.1	64.8	35.2

Figure VII : UBR Coho Fence Counts : 1996-2001

Figure VIII : Upper Bulkley River Coho : Proportion of Females and Males at the Fence

Figure IX : Upper Bulkley River Coho : Percent Hatchery versus Wild Coho : 1997 to 2001

Figure X : UBR Number of Coho, Water T(C) and Water Level(cms) vs Date
No. Coho, Water T (C), Water Level (cms)
500
450
400
350
300
250
200
150
100
50
0
Aug 22/01
Aug 28/01
Sep 3/01
Sep 9/01
Sep 15/01
Sep 21/01
Sep 27/01
Oct 3/01
Oct 9/01
Oct 15/01
Oct 21/01
Oct 27/01
Date
No. Coho
Water Temp(C)
Water Level(cms)

The proportion (percent) of hatchery versus wild coho in the count is shown in Figure IX. The proportion of hatchery coho in the escapement has been an issue of concern on the Upper Bulkley River. In most years since enhanced coho began returning, over 50% of the escapement has consisted of hatchery coho. On average, from 1997 to 2001, hatchery fish have comprised 71% of the coho count at the fence and wild fish have comprised an average of 29% of the coho count at the fence. If enhancement programs are successful, hatchery coho that are spawning naturally should be resulting in an increase in unmarked smolt output. This unmarked smolt output should result in an increase in the number of unmarked adults being enumerated at the coho counting fence.

The 2001 brood unmarked fish originated from 170 females that spawned naturally from the 1998 brood. Using the mean fecundity for the 1998 brood female coho of 3,745 eggs per female(O'Neill – personal communication), the estimated natural egg deposition would have been 636,650 eggs. Using an egg to fry biostandard survival of 0.15, the number of fry produced would have been 95,498. The fry to adult biostandard survival rate is 0.0115. Therefore 95,498 fry would result in an adult return of 1,098 unmarked coho. Using the current exploitation rate of 0.282, the unmarked coho adults in the escapement would be 788 unmarked coho. A total of 773 unmarked coho were counted at the UBR fence which is very close to the expected 788 unmarked coho.

Table VI : Biostandard Survival Rates

Phase	Description	Biostandard Survival Rate
Egg to Fry	Natural egg deposition	0.15
Fry to Adult	Natural (wild) production	0.012
Fry to Adult	Hatchery production	0.0115
Smolt to Adult	Hatchery production	0.0229
Current Exploitation Rate		.282

During the 1999 year of return, approximately 515 females spawned naturally for an estimated egg deposition of 1,501,225 coho eggs. (Using the calculated fecundity for 1999 brood Upper Bulkley River coho of 2,915 eggs per female – O'Neill 2001). The eggs incubated at the hatchery resulted in a fry release of approximately 72,500 fry and approximately 34,000 coho smolts. The return year for that brood year is 2002. Due to the large natural egg deposition, it would be expected that the proportion of unmarked coho adults in the return in 2002, would be higher than the proportion of hatchery coho in the return.

Given a biostandard egg to fry survival for wild Northern coho of 0.15 the estimated fry production for the 1999 brood year would have been approximately 225,184 fry. The biostandard fry to adult survival is 0.012 which would mean that approximately 2,702 adults would be produced. Exploitation rate is currently 0.282 and therefore the number of unmarked(wild) coho expected in the escapement would be 1,940 adults.

Given a mean fry to adult survival for the Adipose/CWT coho fry,that were released into Buck Creek(fry to adult = 0.0115), the total adult production from the 72,500 fry release would be 834 adults. Assuming the same exploitation rate of 0.282, approximately 599 Adipose/CWT adults resulting from fry releases should escape to the Upper Bulkley River.

Given a mean smolt to adult survival of 0.0229 for the Adipose/CWT coho smolts that were released into Buck Creek the total production would be estimated at 779 coho adults. Assuming the same exploitation rate of 0.282, approximately 559 coho adults resulting from smolt releases should escape to the Upper Bulkley River.

Therefore the expected return to the Upper Bulkley River Coho Fence should be approximately 3,098 coho. In the 2002 coho enumeration program at the Upper Bulkley River fence, the estimated proportion of unmarked(wild) coho in the fence count should be approximately 62% of the total.

The natural egg deposition for the 2000 brood year resulted from 49 females being permitted to spawn naturally upstream of the fence. This would result in an estimated natural egg deposition of 152,292 (based on mean fecundity from 1997-1999 : O'Neill, personal communication). Using biostandard survival rates, the expected number of unmarked coho in the escapement would be 197 unmarked adults. The 2000 brood UBR coho egg takes at the Toboggan Creek Hatchery resulted in a fry release of approximately 30,000 fry and there will be a smolt release of approximately 30,000 smolts. The estimated number of marked hatchery coho in the escapement count at the fence would be about 741 coho. Therefore, the proportion of unmarked coho in the fence counts should be around 21% in the 2003 return year.

The natural egg deposition for the 2001 brood year in the Upper Bulkley River is estimated at 3,378,396. The expected number of fry using biostandard survival rates would be 506,759 coho fry. The expected total adult production using biostandard survival rates would be 6,081. Using the current exploitation rate of 0.282, the estimated number of unmarked(wild) adults to escape to the river is 4,366.

In 2001, an egg target of 140,000 UBR coho eggs was accomplished. That egg take should result in a smolt release of approximately 34,000 smolts and about 80,000 fry.

Therefore adult escapement from the smolt release, using biostandard survival rates, should be 559 coho. The estimated adult escapement from the fry release, using biostandard survival rates, should be 660 adults. Therefore in the 2004 return year, the expected number of adults in the Upper Bulkley River would be 4,366 unmarked adults and 1,219 marked adults for a total estimated escapement of 5,585. The proportion of unmarked coho in the fence counts should be around 78% in the 2004 return year.

Table VII summarizes natural egg deposition, fry production, hatchery production, adult production and the resultant coho adults expected in the escapement, by brood year.

Table VII

Upper Bulkley River Coho Estimated Egg Deposition and Production

Brood Year	Number of Females	Estimated Egg Dep.	Est. Fry Prod.	Est. Adult Unmark Prod.	Est Unmark Escapement	Est. Hatch Escapement	Percent Unmark	Percent Hatchery
1998	170	636650	95498	1098	788	1236	39	61
1999	515	1501225	225184	2702	1940	1158	63	37
2000	49	152292	22844	274	197	741	21	79
2001	1087	3378396	506759	6081	4366	1219	78	22

If the proportion of unmarked(wild) coho in the fence count continues to be low ie. between 20 and 50%, and assuming that ocean survival is the same for both hatchery and wild coho and exploitation rates are also similar, this would point to freshwater habitat problems.

3.3 Habitat Issues and Limiting Factors

Several habitat problems have been earmarked as being limiting factors that contribute to reduced salmonid surivival rates. Some of these limiting factors are : quality and quantity of overwintering habitat(Donas and Saimoto 1999, 2000, 2001), water levels and flows(Brockehurst 1996), water quality during crucial times of the year(Donas and Remington 2000), habitat accessibility issues such as cascades and beaver dams as barriers during low water levels (Saimoto 2001 in progress), damage to spawning grounds by sedimentation and possibly due to increased periphyton growth(Donas and Remington 2000).

Recommendations

Recommendation #1 : To determine the contribution of naturally spawning hatchery coho, continue to operate the Upper Bulkley River Coho Assessment Fence.

The Upper Bulkley River Coho Assessment Fence is the principle means of determining the outcome of hatchery enhancement on Upper Bulkley River coho. Specifically, the Upper Bulkley River Coho Assessment Fence allows complete assessment of the fry releases versus the smolt releases. The fence allows an assessment of the contribution that naturally spawning hatchery coho make towards subsequent years of adult coho returns to the Upper Bulkley River system. This assessment can be accomplished by enumerating wild coho at the Upper Bulkley River fence and comparing the proportions of wild and hatchery coho on an annual basis.

The Strategic Stock Enhancement Program is expected to sunset in 2003, however, marked adults from this program will be returning through 2005. **The 2004 year of return should be a turning point in that the predicted escapement will be closer to historical levels (around 5,000 coho) and the proportion of unmarked fish in the escapement should pre-dominate (78% unmarked).**

Annual enumeration of coho at the fence will also allow escapement trends to be monitored over time and escapement trends will determine the direction for Strategic Stock Enhancement on Upper Bulkley River coho and will also set the direction for the mixed stock (sockeye) fishery at the Skeena River.

Recommendation #2 : Continue to mark hatchery smolts with an Adipose and Right Maxillary clip so that fry released and smolt released coho can be differentiated at the Upper Bulkley River Coho Assessment Fence.

During the 2001 Upper Bulkley River coho fence operations, it was possible to visually identify coho adults resulting from fry releases versus coho resulting from smolt releases. Without the ability to visually identify coho resulting from fry or smolt releases, it may be necessary to sacrifice coho at the pre-spawning stage in order to conduct tag de-coding to determine contribution level from the two release strategies. The other option is to conduct a carcass recovery program and collect coded wire tagged heads on the spawning grounds. An evaluation of conducting carcass recovery is being done in 2001.

Unfortunately, the 1999 brood Upper Bulkley River coho fry release and smolt release groups were not differentially marked. Therefore, there can be no visual differentiation at time of fence count in the fall of 2002. In future, where it will be necessary to assess a fry release versus a smolt release strategy, one of the groups should be differentially marked for visual identification if carcass recovery is not feasible.

Recommendation #3 : Coho adults should be taken in proportion to coho run timing.

The majority of coho adults to be used as broodstock at the Toboggan Creek Hatchery were taken from the early part of the run in 2001. No adults were taken from the late part of the run. Adults should be taken for broodstock in such a way that all components of the coho run timing are represented. This should be accomplished within the broodstock guidelines as set out in 1997 ie. one out of every second coho can be taken for broodstock until the smolt egg target of 40,000 eggs is satisfied and after that, one in every three adults can be removed for broodstock.

Recommendation #4 : Toboggan Creek Hatchery staff should be present while coho are being sorted either from the live trap box or in the beach seine sets. Hatchery staff should be on hand to determine which coho are to be transported to the hatchery and they should be present with the transport truck so that fish can be transported immediately.

During the 2001 season, the Toboggan Creek Hatchery staff would request that a certain number of males and females be held for them for later pick-up and transport to the Toboggan Creek Hatchery. What often happened is that fence staff would hold (in the old fence holding box) a number of coho for the hatchery and when hatchery staff arrived, they would not want all of the fish. Therefore, the remaining fish had to be moved again to upstream of the fence. This double handling of fish should be avoided and can be avoided if hatchery staff are present during the initial fish sort. On some occasions, fence staff had to be paid at overtime rates to move fish from the old holding pen to upstream of the fence.

Recommendation #5 : Continue to involve the community (Hazelton to Houston) in fence operations and results.

The District of Houston municipality was a great supporter of this project. The fence components and storage shed are all stored at the District of Houston's Works Yard. The District of Houston also provided gate keys so that fence staff could access the fence site over the District's dyke system.

Local residents visited the fence site and were interested to know what the most recent coho count was. On the wall of the storage shed, posters were made up that included tables and graphs depicting run timing, daily coho counts and proportions of hatchery and wild coho. The information on the posters was updated about every 10 days so that the local community members could be kept up-to-date on the progress of the fence project.

An Open House was held on BC Rivers Day and this event was covered by the local newspaper which afforded an opportunity to increase public awareness of this project.

Many volunteers participated in the fence program during the 2001 season. The Northwest Community College students who were involved in a youth employment program assisted with beach seining and transporting fish upstream of the fence. They also assisted with the carcass recovery program. An Intergrated Resource Management student also volunteered time at the fence. As well, one student from the Work Experience Program at the Houston Secondary School also volunteered time at the fence and during beach seining.

Members of the GWA (Gitxsan Watershed Authority) assisted with fence mobilization and de-mobilization this year and last season. The GWA staff are always willing to assist us in our programs and this has been a valuable contribution to our projects in the watershed. The GWA staff should be kept abreast of fence operations and be given the opportunity to participate in fence operations.

Some of the families that lived in close proximity to the fence conducted voluntary security checks on the fence and site.

5.0 Literature Cited

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O'Neill, M. 2001. Annual Report for Toboggan Creek Hatchery Operations in 1998/99

O'Neill, M. personal communications. Hatchery Manager at the Toboggan Cr. Hatchery for the Toboggan Creek Salmon Enhancement Society.

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Appendix I

Upper Bulkley River Coho Assessment
Fence : 2001
Daily Capture
Records

	Number of Coho							
	Ad only	Ad only	Ad/Rt Max	Ad/Rt Max	Unmark	Unmark	Right Ventral	
Date	Females	Males	Females	Males	Females	Males	Females	Males
Aug 22/01	0	0	0	0	0	0	0	0
Aug 23/01	0	0	0	0	0	0	0	0
Aug 24/01	0	0	0	0	0	1	0	0
Aug 25/01	1	0	0	0	1	1	0	0
Aug 26/01	0	1	0	0	1	3	0	0
Aug 27/01	0	2	1	0	2	1	0	0
Aug 28/01	20	21	10	6	12	21	0	2
Aug 29/01	5	1	0	1	0	2	1	0
Aug 30/01	9	8	3	2	1	1	0	0
Aug 31/01	3	5	1	1	4	3	0	0
Sep 1/01	0	5	0	1	0	1	0	0
Sep 2/01	0	0	0	0	0	0	0	0
Sep 3/01	6	9	8	3	8	3	0	1
Sep 4/01	2	1	0	0	0	4	0	2
Sep 5/01	9	5	6	6	1	5	0	1
Sep 6/01	26	20	10	11	20	15	0	0
Sep 7/01	19	19	20	9	10	20	0	1
Sep 8/01	10	5	3	6	10	8	2	0
Sep 9/01	4	3	1	1	4	2	0	0
Sep 10/01	15	16	8	0	8	8	1	1
Sep 11/01	1	1	1	2	1	0	0	0
Sep 12/01	6	6	4	10	11	7	0	0
Sep 13/01	14	22	19	7	19	9	2	0
Sep 14/01	14	13	8	13	16	14	3	0
Sep 15/01	3	4	6	2	7	7	0	0
Sep 16/01	1	2	4	3	1	1	0	0
Sep 17/01	32	30	20	12	17	17	1	3
Sep 18/01	20	12	13	5	16	9	0	0
Sep 19/01	0	0	0	1	0	4	0	0
Sep 20/01	3	1	4	2	2	2	0	0
Sep 21/01	11	4	5	0	15	8	2	0
Sep 22/01	3	2	2	3	3	6	0	0
Sep 23/01	4	3	7	4	5	10	0	1
Sep 24/01	39	41	33	18	62	47	3	1
Sep 25/01	77	90	57	54	96	78	4	7
Sep 26/01	7	6	7	3	0	11	0	0

	Number of Coho							
	Ad only	Ad only	Ad/Rt Max	Ad/Rt Max	Unmark	Unmark	Right Ventral	
Date	Females	Males	Females	Males	Females	Males	Females	Males
Sep 27/01	0	1	0	1	1	1	0	0
Sep 28/01	0	0	2	0	2	0	0	0
Sep 29/01	0	0	0	0	0	1	0	0
Sep 30/01	0	0	0	0	0	0	0	0
Oct 1/01	0	0	1	0	0	0	0	0
Oct 2/01	0	1	0	0	0	0	0	0
Oct 3/01	0	0	0	0	0	0	0	0
Oct 4/01	0	0	0	0	0	0	0	0
Oct 5/01	0	0	0	0	0	0	0	0
Oct 6/01	0	0	0	0	0	0	0	0
Oct 7/01	0	0	0	0	0	0	0	0
Oct 8/01	1	0	0	0	0	0	0	0
Oct 9/01	0	0	0	0	0	0	0	0
Oct 10/01	3	0	1	0	0	0	1	0
Oct 11/01	27	25	15	17	12	30	1	1
Oct 12/01	0	0	0	0	0	0	0	0
Oct 13/01	0	0	0	0	0	0	0	0
Oct 14/01	0	0	0	0	0	0	0	0
Oct 15/01	0	0	0	0	0	0	0	0
Oct 16/01	4	7	11	12	7	8	0	1
Oct 17/01	0	0	0	0	0	0	0	0
Oct 18/01	0	0	0	0	0	0	0	0
Oct 19/01	2	2	0	1	0	0	0	0
Oct 20/01	0	0	0	0	0	0	0	0
Oct 21/01	1	0	0	0	0	0	0	0
Oct 22/01	21	20	18	12	9	19	2	1
Oct 23/01	0	0	0	0	0	0	0	0
Oct 24/01	0	0	0	0	0	0	0	0
Oct 25/01	0	0	0	0	0	0	0	0
Oct 26/01	0	0	0	0	0	0	0	0
Oct 27/01	0	0	0	0	0	0	0	0
Oct 28/01	0	0	0	0	0	0	0	0
Oct 29/01	0	0	0	0	0	0	0	0
Oct 30/01	0	0	0	0	0	0	0	0
Oct 31/01	1	1	0	1	0	1	0	0
Totals	**424**	**415**	**309**	**230**	**384**	**389**	**23**	**23**

Appendix II

Upper Bulkley River Coho Assessment Fence - Dorsal Fin Tag Recoveries 2001

Number of Dorsal Fin Tagged Coho and Steelhead **UBR Fence 2001**

Date	Species	Sex	Tag Color	Tag No.	Mark Type
27-Aug	Coho	M	Blue	52044	Unmarked
28-Aug	Coho	M	Blue	52733MF	Unmarked
29-Aug	Coho	M	Blue	52790 MF	Adipose
29-Aug	Coho	F	Blue	54053 MF	Adipose
30-Aug	Coho	M	Blue	52900MF	Adipose
30-Aug	Coho	F	Blue	52987MF	Adipose
30-Aug	Coho	F	Blue	54120MF	Ad/RM
31-Aug	Coho	M	Blue	52264	Adipose
31-Aug	Coho	M	Blue	52505	Ad/RM
30-Aug	Sockeye	F	Yellow	2616	Unmarked
3-Sep	Coho	F	Blue	52711MF	Unmarked
3-Sep	Coho	M	Blue	52743MF	Unmarked
3-Sep	Coho	M	Blue	52966MF	ADRM
5-Sep	Coho	M	Blue	54021MF	Unmarked
5-Sep	Coho	M	Blue	54913MF	AdRM
6-Sep	Coho	M	Blue	0424MS	Adipose
6-Sep	Coho	M	Blue	0883MS	Unmarked
6-Sep	Coho	M	Blue	52872MF	Unmarked
6-Sep	Coho	F	Blue	53207MF	Adipose
6-Sep	Coho	M	Blue	53369MF	AdRM
6-Sep	Coho	F	Blue	54389MF	AdRM
6-Sep	Coho	F	Blue	54465MF	Unmarked
6-Sep	Coho	M	Blue	54573MF	Adipose
6-Sep	Coho	F	Blue	54730MF	Unmarked
6-Sep	Coho	F	Blue	54761MF	AdRM
6-Sep	Coho	F	Blue	54847MF	Adipose
6-Sep	Coho	M	Blue	54879MF	Unmarked
7-Sep	Coho	M	Blue	52629MF	Adipose
7-Sep	Coho	M	Blue	52694MF	Adipose
7-Sep	Coho	M	Blue	52793MF	Unmarked
7-Sep	Coho	F	Blue	53080MF	AdRM
7-Sep	Coho	F	Blue	53130MF	Adipose
7-Sep	Coho	F	Blue	53509MF	Unmarked
7-Sep	Coho	M	Blue	54102MF	Unmarked
7-Sep	Coho	M	Blue	54206MF	Unmarked
7-Sep	Coho	M	Blue	54548MF	Adipose
6-Sep	Coho	M	Pink	4833MS	Unmarked
3-Sep	Coho	F	White	3473MS	AdRM
3-Sep	Coho	F	White	3653MS	Unmarked
4-Sep	Coho	M	White	3852MS	Unmarked
5-Sep	Coho	F	White	3497MS	AdRM
6-Sep	Coho	F	White	3749MS	Adipose
6-Sep	Coho	M	White	3863MS	Adipose

Week 1	Blue	9
	Yellow	1
Week 2	Blue	41
	Yellow	2
	Pink	2
	White	10
	Orange	4

Appendix II Cont'd

Upper Bulkley River Coho Assessment Fence - Dorsal Fin Tag Recoveries 2001
Number of Dorsal Fin Tagged Coho and Steelhead UBR Fence 2001

Date	Species	Sex	Tag Color	Tag No.	Mark Type	
7-Sep	Coho	M	Blue	54763MF	AdRM	**Week 2**
8-Sep	Coho	F	Blue	52410	Unmarked	
8-Sep	Coho	F	Blue	53096	AdRM	
8-Sep	Coho	M	Blue	53544	AdRM	
8-Sep	Coho	F	Blue	53564	Adipose	
8-Sep	Coho	F	Blue	53647	Adipose	
8-Sep	Coho	F	Blue	54583	Unmarked	
9-Sep	Coho	M	Blue	53269MF	Unmarked	
10-Sep	Coho	F	Blue	0335	AdRM	
10-Sep	Coho	F	Blue	53019MF	Adipose	
10-Sep	Coho	M	Blue	53263MF	Unmarked	
10-Sep	Coho	F	Blue	53391MF	RV	
10-Sep	Coho	F	Blue	53547MF	Adipose	
10-Sep	Coho	F	Blue	54702MF	Adipose	
10-Sep	Coho	F	Blue	54832MF	Unmarked	
7-Sep	Coho	M	Orange	4029	AdRM	
8-Sep	Coho	F	Orange	4019	Unmarked	
10-Sep	Coho	F	Orange	5044MS	Unmarked	
10-Sep	Coho	F	Orange	5116MS	Adipose	
7-Sep	Coho	M	Pink	4725MS	Unmarked	
9-Sep	Coho	M	Pink	4989	Unmarked	
7-Sep	Coho	F	White	3851MS	AdRM	
8-Sep	Coho	F	White	3714	RV	
10-Sep	Coho	F	White	3479MS	Unmarked	
10-Sep	Coho	F	White	3503MS	Adipose	
9-Sep	Coho	M	Yellow	1205MS	Adipose	
10-Sep	Sockeye	F	Yellow	2480	Unmarked	
11-Sep	Coho	M	Blue	53781	AdRM	**Week 3**
12-Sep	Coho	F	Blue	52983	Unmarked	
12-Sep	Coho	M	Blue	53004	AdRM	
12-Sep	Coho	F	Blue	53186	Unmarked	
12-Sep	Coho	F	Blue	53200	Unmarked	
12-Sep	Coho	M	Blue	53295	Adipose	
12-Sep	Coho	F	Blue	53798	Unmarked	
12-Sep	Coho	F	Blue	53845	AdRM	
12-Sep	Coho	F	Blue	53927	Unmarked	
12-Sep	Coho	M	Blue	54105	Unmarked	
12-Sep	Coho	F	Blue	54494	Unmarked	
13-Sep	Coho	F	Blue	53303	AdRM	
13-Sep	Coho	F	Blue	53500	Adipose	
13-Sep	Coho	F	Blue	53522	AdRM	
13-Sep	Coho	F	Blue	53590	Unmarked	
13-Sep	Coho	F	Blue	53772	Unmarked	
11-Sep	Coho	F	Red	1803	Unmarked	
12-Sep	Coho	F	Red	1500	AdRM	

Blue	48
Red	7
Orange	7
Pink	7
Lost	1
White	8
Yellow	1

Appendix II Cont'd

Upper Bulkley River Coho Assessment Fence - Dorsal Fin Tag Recoveries 2001
Number of Dorsal Fin Tagged Coho and Steelhead UBR Fence 2001

Date	Species	Sex	Tag Color	Tag No.	Mark Type	
13-Sep	Coho	F	Blue	53887	AdRM	Week 3
13-Sep	Coho	M	Blue	54208	Adipose	
13-Sep	Coho	F	Blue	54846	AdRM	
13-Sep	Coho	F	Blue	56051	Unmarked	
13-Sep	Coho	M	Blue	56223	Adipose	
14-Sep	Coho	M	Blue	52522	Unmarked	
14-Sep	Coho	F	Blue	53010	Adipose	
14-Sep	Coho	F	Blue	53778	Adipose	
14-Sep	Coho	F	Blue	53876	Unmarked	
14-Sep	Coho	M	Blue	54114	Unmarked	
14-Sep	Coho	M	Blue	54303	Unmarked	
14-Sep	Coho	F	Blue	54357	Unmarked	
14-Sep	Coho	F	Blue	54564	Unmarked	
14-Sep	Coho	M	Blue	56047	AdRM	
15-Sep	Coho	M	Blue	54168	NA	
16-Sep	Coho	F	Blue	52600	NA	
17-Sep	Coho	F	Blue	53209	Unmarked	
17-Sep	Coho	F	Blue	53366	Adipose	
17-Sep	Coho	F	Blue	53952	Unmarked	
17-Sep	Coho	F	Blue	54209	Unmarked	
17-Sep	Coho	F	Blue	54267	AdRM	
17-Sep	Coho	F	Blue	54452	Unmarked	
17-Sep	Coho	F	Blue	54603	Unmarked	
17-Sep	Coho	M	Blue	54776	AdRM	
17-Sep	Coho	F	Blue	56044	Adipose	
17-Sep	Coho	M	Blue	56059	Unmarked	
17-Sep	Coho	F	Blue	56385	AdRM	
17-Sep	Coho	F	Blue	56508	AdRM	
14-Sep	Coho	F	Lost tag		Unmarked	
14-Sep	Coho	F	Orange	5192	AdRM	
15-Sep	Coho	M	Orange	5047	NA	
16-Sep	Coho	M	Orange	4678	NA	
16-Sep	Coho	M	Orange	5030	NA	
17-Sep	Coho	F	Orange	4259	AdRM	
14-Sep	Coho	M	Pink	4460	Unmarked	
14-Sep	Coho	M	Pink	4533	Adipose	
14-Sep	Coho	F	Pink	4637	Unmarked	
14-Sep	Coho	M	Pink	4744	Unmarked	
15-Sep	Coho	M	Pink	1478	NA	
14-Sep	Coho	F	Red	5495	Adipose	
13-Sep	Coho	M	White	3514	Unmarked	
13-Sep	Coho	M	White	3929	Adipose	
14-Sep	Coho	F	White	3710	AdRM	
15-Sep	Coho	F	White	3078	NA	
14-Sep	Sockeye	F	Yellow	2202	Unmarked	

Appendix II Cont'd

Upper Bulkley River Coho Assessment Fence - Dorsal Fin Tag Recoveries 2001
Number of Dorsal Fin Tagged Coho and Steelhead UBR Fence 2001

Date	Species	Sex	Tag Color	Tag No.	Mark Type	
18-Sep	Coho	F	Blue	54031	Unmarked	**Week 3**
18-Sep	Coho(2tag)	M	Blue	54872	Adipose	
18-Sep	Coho	M	Blue	56139	Adipose	
18-Sep	Coho	F	Blue	56584	AdRM	
18-Sep	Coho	M	Orange	5036	Adipose	
18-Sep	Coho	F	Orange	5714	AdRM	
17-Sep	Coho	M	Pink	4873	Adipose	
18-Sep	Coho	F	Pink	4355	AdRM	
17-Sep	Coho	M	Red	5137	Unmarked	
17-Sep	Coho	F	Red	5466	Adipose	
18-Sep	Coho	F	Red	5740	Adipose	
18-Sep	Coho	F	Red	5750	AdRM	
17-Sep	Coho	M	White	3038	Adipose	
17-Sep	Coho	M	White	3516	AdRM	
17-Sep	Coho	M	White	3671	AdRM	
18-Sep	Coho	M	White	3824	Unmarked	
19-Sep	Coho	M	Blue	56118	AdRM	**Week 4**
20-Sep	Coho	F	Blue	53921	Adipose	
20-Sep	Coho	M	Blue	56375	Unmarked	
21-Sep	Coho	F	Blue	52206	Adipose	
21-Sep	Coho	F	Blue	53137	Unmarked	
23-Sep	Coho	F	Blue	53824	Unmarked	
23-Sep	Coho	M	Blue	56656	Adipose	
24-Sep	Coho	F	Blue	219	Unmarked	
24-Sep	Coho	F	Blue	537	Adipose	
24-Sep	Coho	F	Blue	6055	Unmarked	
24-Sep	Coho	F	Blue	6093	Unmarked	
24-Sep	Coho	M	Blue	52278	Unmarked	
24-Sep	Coho	M	Blue	52665	Adipose	
24-Sep	Coho	M	Blue	52853	Unmarked	
24-Sep	Coho	M	Blue	52971	Unmarked	
24-Sep	Coho	M	Blue	53226	Adipose	
24-Sep	Coho	F	Blue	53327	Unmarked	
24-Sep	Coho	M	Blue	53405	Unmarked	
24-Sep	Coho	M	Blue	53600	Unmarked	
24-Sep	Coho	M	Blue	53642	Unmarked	
24-Sep	Coho	M	Blue	53836	Unmarked	
24-Sep	Coho	F	Blue	53839	AdRM	
24-Sep	Coho	M	Blue	54088	Unmarked	
24-Sep	Coho	F	Blue	54272	Adipose	
24-Sep	Coho	M	Blue	54482	Unmarked	
24-Sep	Coho	M	Blue	54925	Adipose	
20-Sep	Coho	M	Red	5162	AdRM	
21-Sep	Coho	F	Red	5539	RV	
23-Sep	Coho	F	Red	5553	Adipose	

Blue	79
Orange	19
Pink	4
Red	6
White	10
Yellow	2

Appendix II Cont'd

Upper Bulkley River Coho Assessment Fence - Dorsal Fin Tag Recoveries 2001
Number of Dorsal Fin Tagged Coho and Steelhead UBR Fence 2001

Date	Species	Sex	Tag Color	Tag No.	Mark Type	
24-Sep	Coho	M	Blue	54988	AdRM	Week 4
24-Sep	Coho	F	Blue	54995	Unmarked	
24-Sep	Coho	M	Blue	56191	Adipose	
24-Sep	Coho	M	Blue	56325	Unmarked	
24-Sep	Coho	M	Blue	56370	Adipose	
24-Sep	Coho	M	Blue	56473	AdRM	
25-Sep	Coho	F	Blue	334	Unmarked	
25-Sep	Coho	M	Blue	6146	Adipose	
25-Sep	Coho	F	Blue	6168	Unmarked	
25-Sep	Coho	M	Blue	6253	RV	
25-Sep	Coho	M	Blue	6392	Adipose	
25-Sep	Coho	F	Blue	6411	AdRM	
25-Sep	Coho	F	Blue	6539	Adipose	
25-Sep	Coho	F	Blue	6705	AdRM	
25-Sep	Coho	M	Blue	52843	Adipose	
25-Sep	Coho	M	Blue	52989	Adipose	
25-Sep	Coho	F	Blue	53153	Unmarked	
25-Sep	Coho	F	Blue	53178	AdRM	
25-Sep	Coho	F	Blue	53215	Adipose	
25-Sep	Coho	M	Blue	53319	Unmarked	
25-Sep	Coho	M	Blue	53460	Unmarked	
25-Sep	Coho	M	Blue	53604	Adipose	
25-Sep	Coho	M	Blue	53659	RV	
25-Sep	Coho	F	Blue	53896	Unmarked	
25-Sep	Coho	F	Blue	53919	Adipose	
25-Sep	Coho	M	Blue	53922	Adipose	
25-Sep	Coho	M	Blue	53933	Unmarked	
25-Sep	Coho	M	Blue	54185	Unmarked	
25-Sep	Coho	M	Blue	54285	Adipose	
25-Sep	Coho	M	Blue	54290	Unmarked	
25-Sep	Coho	F	Blue	54320	Unmarked	
25-Sep	Coho	M	Blue	54412	AdRM	
25-Sep	Coho	F	Blue	54589	Unmarked	
24-Sep	Coho	F	Orange	5300	AdRM	
24-Sep	Coho	F	Orange	5303	Unmarked	
24-Sep	Coho	M	Orange	5411	Unmarked	
24-Sep	Coho	F	Orange	5605	Adipose	
24-Sep	Coho	M	Orange	5616	AdRM	
24-Sep	Coho	F	Orange	5744	AdRM	
24-Sep	Coho	M	Pink	4599	Adipose	
24-Sep	Coho	M	Pink	4709	AdRM	
24-Sep	Coho	F	White	3111	Unmarked	
24-Sep	Coho	M	White	3896	Adipose	
24-Sep	Coho	M	White	3964	Unmarked	
24-Sep	Coho	F	Yellow	1249	AdRM	

Appendix II Cont'd

Upper Bulkley River Coho Assessment Fence - Dorsal Fin Tag Recoveries 2001
Number of Dorsal Fin Tagged Coho and Steelhead UBR Fence 2001

Date	Species	Sex	Tag Color	Tag No.	Mark Type	
25-Sep	Coho	M	Blue	54971	Adipose	Week 4
25-Sep	Coho	F	Blue	56010	Unmarked	
25-Sep	Coho	F	Blue	56030	Adipose	
25-Sep	Coho	F	Blue	56057	AdRM	
25-Sep	Coho	M	Blue	56073	Adipose	
25-Sep	Coho	M	Blue	56150	AdRM	
25-Sep	Coho	F	Blue	56166	RV	
25-Sep	Coho	F	Blue	56232	AdRM	
25-Sep	Coho	F	Blue	56406	RV	
25-Sep	Coho	F	Blue	56419	Unmarked	
25-Sep	Coho	F	Blue	56428	AdRM	
25-Sep	Coho	F	Blue	56439	Adipose	
25-Sep	Coho	F	Blue	56648	Adipose	
25-Sep	Coho	M	Blue	56960	Adipose	
25-Sep	Coho	F	Blue	56966	Unmarked	
25-Sep	Coho	M	Blue	56992	AdRM	
25-Sep	Coho	F	Blue	57300	Unmarked	
25-Sep	Coho	F	Blue	Lost	Unmarked	
25-Sep	Coho	F	Blue	PBS tag	Adipose	
26-Sep	Coho	M	Blue	54697	Unmarked	
25-Sep	Coho	F	Orange	5009	Unmarked	
25-Sep	Coho	M	Orange	5239	Unmarked	
25-Sep	Coho	F	Orange	5402	AdRM	
25-Sep	Coho	F	Orange	5473	Unmarked	
25-Sep	Coho	F	Orange	5487	Unmarked	
25-Sep	Coho	F	Orange	5545	AdRM	
25-Sep	Coho	F	Orange	5577	Adipose	
25-Sep	Coho	F	Orange	5643	Adipose	
25-Sep	Coho	F	Orange	5720	AdRM	
25-Sep	Coho	F	Orange	5730	Unmarked	
25-Sep	Coho	F	Orange	5736	AdRM	
25-Sep	Coho	M	Orange	5779	Unmarked	
25-Sep	Coho	M	Orange	MOE30888	Unmarked	
25-Sep	Coho	F	Pink	4723	Unmarked	
25-Sep	Coho	F	Pink	4796	AdRM	
25-Sep	Coho	M	Red	5659	AdRM	
25-Sep	Coho	M	Red	PBS tag	Adipose	
25-Sep	Coho	F	White	3556	Unmarked	
25-Sep	Coho	M	White	3560	Adipose	
25-Sep	Coho	M	White	3725	Adipose	
25-Sep	Coho	F	White	3829	Adipose	
25-Sep	Coho	M	White	3913	AdRM	
25-Sep	Coho	F	White	3979	Unmarked	
25-Sep	Coho	M	White	3981	AdRM	
25-Sep	Coho	M	Yellow	Lost	Unmarked	

Appendix II Cont'd

Upper Bulkley River Coho Assessment Fence - Dorsal Fin Tag Recoveries 2001
Number of Dorsal Fin Tagged Coho and Steelhead UBR Fence 2001

Date	Species	Sex	Tag Color	Tag No.	Mark Type	
26-Sep	Coho	M	Red	5298	Unmarked	**Week 4**
26-Sep	Coho	M	Blue	05306PBS	Unmarked	
26-Sep	Coho	M	Blue	56957	Unmarked	
27-Sep-01	Coho	M	Blue	6532	Adipose	**Week 5**
11-Oct	Coho	M	Blue	52003	Adipose	
11-Oct	Coho	M	Blue	56803	Unmarked	**Week 6**
11-Oct	Coho	M	Blue	54142	Adipose	
11-Oct	Coho	F	Blue	56026	AdRM	
11-Oct	Coho	F	Blue	57622	AdRM	
11-Oct	Coho	F	Blue	54298	AdRM	
11-Oct	Coho	M	Blue	57176	AdRM	
11-Oct	Coho	F	Blue	55087	Adipose	
11-Oct	Coho	M	Blue	57182	AdRM	
11-Oct	Coho	F	Blue	52207	Unmarked	
11-Oct	Coho	F	Blue	53983	Unmarked	
11-Oct	Coho	M	Blue	6489	AdRM	
11-Oct	Coho	M	Blue	53631	Adipose	
11-Oct	Coho	F	Blue	6102	Adipose	
11-Oct	Coho	F	Blue	53979	Adipose	
11-Oct	Coho	M	Blue	52148	Adipose	
11-Oct	Coho	F	Blue	6610	Adipose	
11-Oct	Coho	F	Green	70503	AdRM	
11-Oct	Coho	F	Green	7504	AdRM	
11-Oct	Coho	F	Green	7206	Adipose	
11-Oct	Coho	M	Green	7428	Adipose	
11-Oct	Coho	M	Green	7241	Unmarked	
11-Oct	Coho	F	Orange	5297	Adipose	
11-Oct	Coho	F	Orange	4804	Adipose	
11-Oct	Coho	M	Orange	5712	Unmarked	
11-Oct	Coho	M	Orange	4612	Adipose	
			two tags	3337		
8-Oct	Coho	F	White	3336	Adipose	
11-Oct	Coho	M	White	8238	Adipose	
11-Oct	Coho	M	White	3846	Unmarked	
11-Oct	Coho	M	Yellow	1347	Unmarked	
16-Oct-01	Coho	F	Blue	57465	Unmarked	**Week 7**
16-Oct-01	Coho	M	Blue	56097	Adipose	
16-Oct-01	Coho	M	Blue	52585	Unmarked	
16-Oct-01	Coho	M	Blue	5430	Unmarked	
16-Oct-01	Coho	M	Blue	56308	Adipose	
16-Oct-01	Coho	F	Blue	57410	Adipose	
16-Oct-01	Coho	F	Green	7167	Adipose	
16-Oct-01	Coho	F	Green	7301	Adipose	
16-Oct-01	Coho	M	Green	7434	Unmarked	
16-Oct-01	Coho	M	Pink	4993	AdRM	

Blue	1

Blue	16
Green	5
Orange	4
Pink	0
White	3
Yellow	1

Blue	20
Green	6
Pink	2
Grey	5
Orange	4
White	2
Yellow	1
Lost Tag	1
Purple	1

Appendix II Cont'd

Upper Bulkley River Coho Assessment Fence - Dorsal Fin Tag Recoveries 2001
Number of Dorsal Fin Tagged Coho and Steelhead UBR Fence 2001

Date	Species	Sex	Tag Color	Tag No.	Mark Type			
16-Oct-01	Coho	M	Blue	53535	AdRM	**Week 7**		
16-Oct-01	Coho	F	Blue	57285	AdRM			
16-Oct-01	Coho	F	Blue	54517	Unmarked			
16-Oct-01	Coho	M	Blue	6103	AdRM			
19-Oct	Coho	M	Blue	6054	AdRM			
22-Oct	Coho	M	Blue	6457	Adipose			
22-Oct	Coho	F	Blue	56342	AdRM			
22-Oct	Coho	F	Blue	54790	AdRM			
22-Oct	Coho	M	Blue	54889	Adipose			
22-Oct	Coho	M	Blue	57117	Unmarked			
22-Oct	Coho	F	Blue	53954	AdRM			
22-Oct	Coho	F	Blue	57333	Adipose			
22-Oct	Coho	F	Blue	57504	AdRM			
22-Oct	Coho	F	Blue	57307	AdRM			
16-Oct-01	Coho	F	Green	7365	Unmarked			
22-Oct	Coho	F	Green	7251	Adipose			
22-Oct	Coho	F	Green	7476	Adipose			
16-Oct-01	Coho	M	Grey	8228	AdRM			
16-Oct-01	Coho	M	Grey	8307	AdRM			
22-Oct	Coho	F	Grey	8295	Adipose			
22-Oct	Coho	F	Grey	8252	AdRM			
22-Oct	Coho	F	Grey	8317	Unmarked			
22-Oct	Coho	M	Orange	5503	Unmarked			
22-Oct	Coho	M	Orange	5499	Unmarked			
22-Oct	Coho	M	Orange	5208	Unmarked			
22-Oct	Coho	M	Orange	4358	Unmarked			
22-Oct	Coho	M	Pink	1146	AdRM			
22-Oct	Coho	M	Purple	9138	AdRM			
22-Oct	Coho	F	Tag lost		Adipose			
21-Oct	Coho	F	White	8268	Adipose			
22-Oct	Coho	M	White	3601	Adipose			
16-Oct-01	Coho	M	Yellow	1313	Unmarked			
31-Oct	Coho	M	White	3969	Adipose	**Week 8**	White	1

Appendix III

Upper Bulkley River Coho Assessment Fence

Mobilization and De-mobilization Instructions

The Upper Bulkley River fence spans about 80 feet of the river. The fence sill is surfaced with wood planking which is permanent. Protruding through the wood sill are a series of tabs which the fence "A" frames are bolted to. The "A" frames are held together by a series of "I" beam supports on which a walkway safety railing and walkway grates sit. The "A" frames, once connected by the "I" beams, provide support for the fence panels which are of aluminum broomstick construction. The fence panels are in two sections and slide down guides on the "A" frames. There is a live box panel which connects to the live box lead-in, and this panel also slides down the "A" frames to fit in place. Once all of the panels and the live box with lead-in are in place, upstream migrating coho are blocked off by the fence and can only enter the "V" lead-in to the live box.

Installation

Fence Components

- Broomstick panels
- "A" frames with 1 and 1/8 inch diamater bolts/nuts/washers/cauder pins
- "I" support beams with 19 mm diameter bolts/nuts/washers
- walkway safety railings with 19 mm diameter bolts/nuts/washers
- walkway grating with "S" clips and 9/16 inch diameter bolts/nuts/washers
- live box (assembled)
- live box lid
- live box "V" lead-in
- live box fence panel (to attach live box to)
- Storage shed

Tools and Equipment Required

- 1 and 1/8 inch socket wrench and a 1 and 1/8 inch open end wrench
- 19mm socket and open end wrench
- 9/16 wrenches (socket and open end)
- hammer
- sledge hammer
- electrical tie straps (heavy gauge)
- locks and keys (5 locks with keys)
- screw driver set
- chest waders
- dry suit
- PFD's

- Tarps
- Four plywood sheets (4 by 8 feet)
- rope

All fence components are currently stored at the District of Houston Works Yard. A flat deck truck or large trailer is required to transport fence components from the Works Yard to the fence site. All fence components are numerically labelled with the number one pieces being those against river left (looking downstream).

Prior to installing the fence, sweep the wood sill off as the surface of the sill is very slippery.

All of the "A" frames should be installed first. Ensure that the appropriate washers are used and that cauder pins are also installed. Installation and de-mobilization are much easier if bolts are installed with nuts and cauder pins all facing the same way.

Once "A" frames have been installed, install the support "I" beams. This will stabilize the "A" frames.

Walkway grates can then be installed using the "S" clips and bolts. Once the walkway grates are in place, the safety railings can be installed.

The fence panels can then be slid into place. The tabs on the bottom panels should face up and the tabs on the top panels should also face up. The result should be that there is a space between top and bottom panels that allows debris to flow through the fence along the middle, rather than plug the broomsticks.

Install the live box connector panel, and lift live box into place. The live box sits on a series of pins on the live box connector panel. Install the live box lid and the locks.

An extension should be built to fit onto the "V" lead-in. This can be constructed of two by fours and should lengthen the lead-in by 18 to 24 inches. This extension makes it much more difficult for coho to find their way out of the trap i.e. they swim back downstream and out of the trap.

Install a series of tarps along all of the bottom panels so that all of the water is forced to flow over the bottom panel but inbetween the bottom and top panels. This will also force more attraction water through the live box lead-in. Make sure the gate on the upstream side of the live box is bolted in place otherwise fish will escape through that opening.

Connect four by eight foot sheets of ¼ inch plywood, lengthwise, and float this plywood cover from the lead-in towards the old fence sill. Try to float the plywood in such a manner that the majority of flow is going under the plywood cover.

De-mobilization Instructions

Fence components have been stored at the District of Houston Works Yard which is only 0.5 kms away from the fence site. Annual permission is required to store the fence components at the Works Yard.

A flat deck 5 ton truck with crane was used to assist with fence de-mobilization.

Remove all fence panels except for the live trap connector panel.

Walkway grating can be loosened (loosen "S" clips/bolts/nuts) while the walkway safety railings are being loosened. Walkway grating can be removed starting at the river right side (looking downstream). If walkway grating is piled on two by fours, then it can be chained together and lifted by crane onto a flat deck truck.

Once walkway grating and safety railings have been removed, the "I" beams can be removed next. These are easy to hand load onto the truck so do not need to be chained together.

"A" frames should be removed last. Often, water conditions are a little higher at time of de-mobilization than at time of installation. A person in scuba gear is an asset when removing bolts/nuts and cauder pins from the "A" frames to detach them from the fence sill. The "A" frames holding the live box in place can be removed and the connector panel can also be removed. The live box can be chained in such a way that the crane can lift the box out of the water and onto the truck. (Store the connector panel inside the live box).

All bolts/nuts/washers/cauder pins should be kept in separate, labelled, storage containers. This makes installation much easier as it is extremely time consuming trying to separate a mass of bolts/nuts and washers.

All fence components can be loaded onto a 5 ton flatdeck truck and it takes about 3 trips to tranfer all fence components and storage shed to the District of Houston Works Yard.

Appendix IV

Upper Bulkley River Coho Assessment Fence : 2001

Daily Coho Capture Records

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : August 22,2001

Water Temp. 14 C

Water Level 27 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured 11 chinook in the trap.
No dorsal fin tagged coho or steelhead were captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 23-Aug-01

Water Temp. 14 C

Water Level 27 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured 14 chinook in the trap.
No dorsal fin tagged coho or steelhead captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 24-Aug-01

Water Temp. 13 C

Water Level 27 cms

Number of Unmarked Coho

Females 0 Males 1

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total number of coho captured 1

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured 13 chinook in the trap.
No dorsal fin tagged coho or steelhead captured.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 25-Aug-01

Water Temp.

Water Level

Number of Unmarked Coho

Females 1

Males 1

Number of Adipose Only Coho

Females 1

Males 0

Number of Adipose/Rt. Max Coho

Females 0

Males 0

Number of Right Ventral Coho

Females 0

Males 0

Total Females 2

Total Males 1

Total number of coho captured 3

Number of Coho Released Upstream of the Fence

Females : 2

Males : 1

Number of Coho Removed for Broodstock

Females : 0

Males : 0

Comments : Captured 1 pink salmon. This is the first year in the past nine years that pink salmon have been observed at the fence.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 26-Aug-01

Water Temp.

Water Level

Number of Unmarked Coho

Females 1

Males 3

Number of Adipose Only Coho

Females 0

Males 1

Number of Adipose/Rt. Max Coho

Females 0

Males 0

Number of Right Ventral Coho

Females 0

Males 0

Total Females 1

Total Males 4

Total number of coho captured 4

Number of Coho Released Upstream of the Fence Females : 1 Males : 4

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured 3 chinook in the trap.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 27-Aug-01

Water Temp. 15 C

Water Level 27 cms.

Number of Unmarked Coho

Females 2 Males 1

Number of Adipose Only Coho

Females 0 Males 2

Number of Adipose/Rt. Max Coho

Females 1 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 3 Total Males 3

Total number of coho captured 6

Number of Coho Released Upstream of the Fence Females : 3 Males : 3

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : One wild coho was dorsal fin tagged with a blue tag with the number 52044
Captured 4 chinook and 1 steelhead.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 28-Aug-01

Water Temp. 13 C

Water Level 26.5 cms

Number of Unmarked Coho

Females 12 seine

Males 19 seine
2 trap

Number of Adipose Only Coho

Females 18 seine
2 trap

Males 19 seine
2 trap

Number of Adipose/Rt. Max Coho

Females 9 seine
1 trap

Males 6 seine

Number of Right Ventral Coho

Females 0

Males 2 seine

Total Females 42

Total Males 50

Total number of coho captured 92

Number of Coho Released Upstream of the Fence Females : 34 Males : 42

Number of Coho Removed for Broodstock Females : 8 Males : 8

Comments : Conducted three seine sets today. One seine set was done inbetween the two fence sills. Two seine sets were conducted in the pool below the old fence sill. We are capturing right ventral clipped coho and this was unexpected.
Mark ratio today was 35.86% wild versus 44.57% adipose versus 17.39% ad/rt max versus 2.17% rt. Ventral. Trap vandalized in the evening.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 29-Aug-01

Water Temp. 13 C

Water Level 26 cms

Number of Unmarked Coho

Females 0 Males 2

Number of Adipose Only Coho

Females 5 Males 1

Number of Adipose/Rt. Max Coho

Females 0 Males 1

Number of Right Ventral Coho

Females 1 Males 0

Total Females 6 Total Males 4

Total number of coho captured 9

Number of Coho Released Upstream of the Fence Females : 6 Males : 4

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Two coho were dorsal fin tagged. Captured 2 chinook in the trap.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 30-Aug-01

Water Temp. 15 C

Water Level 24.5 cms

Number of Unmarked Coho

Females 1 Males 1

Number of Adipose Only Coho

Females 9 Males 8

Number of Adipose/Rt. Max Coho

Females 3 Males 2

Number of Right Ventral Coho

Females Males

Total Females 13 Total Males 11

Total number of coho captured 24

Number of Coho Released Upstream of the Fence Females : 13 Males : 11

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured 5 chinook, 1 dorsal fin tagged sockeye and three dorsal fin tagged coho today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 31-Aug-01

Water Temp. 12.5 C

Water Level 26 cms

Number of Unmarked Coho

Females 4 Males 3

Number of Adipose Only Coho

Females 3 Males 5

Number of Adipose/Rt. Max Coho

Females 1 Males 1

Number of Right Ventral Coho

Females 0 Males 0

Total Females 8 Total Males 9

Total number of coho captured 17

Number of Coho Released Upstream of the Fence Females : 8 Males : 9

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured 1 Pink and 1 chinook.
Two of the coho had blue dorsal fin tags.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 1-Sep-01

Water Temp. 14 C

Water Level 25 cms

Number of Unmarked Coho

Females 0 Males 1

Number of Adipose Only Coho

Females 0 Males 5

Number of Adipose/Rt. Max Coho

Females 0 Males 1

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 7

Total number of coho captured 7

Number of Coho Released Upstream of the Fence Females : 0 Males : 7

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : One male coho was observed getting underneath the bottom fence panels. The bottom panels were all turned so that the panels are now flush with the fence sill whereas before, the tabs allowed about a three inch space under the panels. There is still about a two inch space between top and bottom panels to allow for easier cleaning of leaf debris.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 2-Sep-01

Water Temp. 12 C

Water Level 25.5 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 3-Sep-01

Water Temp. 11 C

Water Level 25.5 cms

Number of Unmarked Coho

Females	8	seine	Males	2	seine
	0	fence		1	fence

Number of Adipose Only Coho

Females	3	seine	Males	9	seine
	3	fence		0	fence

Number of Adipose/Rt. Max Coho

Females	8	seine	Males	1	seine
	0	fence		2	fence

Number of Right Ventral Coho

Females	0		Males	1	seine

Total Females 22

Total Males 16

Total number of coho captured 23

Number of Coho Released Upstream of the Fence Females : 5 Males : 5

Number of Coho Removed for Broodstock Females : 17 Males : 11

Comments : Seine set was done today to look at mark ratio.
Tarped off the bottom panels on the fence to encourage more water to go through the lead in area. We placed the tarps so that most of the water is going through the lead in. Fish are lining up under the floating plywood and are entering the lead-in area.
Five dorsal fin tagged coho captured today. Two chinook caught today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 4-Sep-01

Water Temp. 11 C

Water Level 24.5 cms

Number of Unmarked Coho

Females 0 Males 4

Number of Adipose Only Coho

Females 2 Males 1

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 2

Total Females 2 Total Males 7

Total number of coho captured 9

Number of Coho Released Upstream of the Fence Females : 2 Males : 7

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : One dorsal fin tagged coho caught. Also captured 4 pinks and 2 chinook.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 5-Sep-01

Water Temp. 10 C

Water Level 25 cms

Number of Unmarked Coho

Females 1 Males 5

Number of Adipose Only Coho

Females 9 Males 5

Number of Adipose/Rt. Max Coho

Females 6 Males 6

Number of Right Ventral Coho

Females 0 Males 1

Total Females 16 Total Males 17

Total number of coho captured 33

Number of Coho Released Upstream of the Fence Females : 5 Males : 8

Number of Coho Removed for Broodstock Females : 11 Males : 9

Comments : Three dorsal fin tagged coho captured today. Three pink salmon caught.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 6-Sep-01

Water Temp. 11 C

Water Level 26 cms

Number of Unmarked Coho

Females 20 Males 15

Number of Adipose Only Coho

Females 26 Males 20

Number of Adipose/Rt. Max Coho

Females 10 Males 11

Number of Right Ventral Coho

Females 0 Males 0

Total Females 56 Total Males 46

Total number of coho captured 102

Number of Coho Released Upstream of the Fence Females : 42 Males : 38

Number of Coho Removed for Broodstock Females : 14 Males : 8

Comments : Fifteen dorsal fin tagged coho captured today.
One steelhead and one pink also caught.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 7-Sep-01

Water Temp. 10 C

Water Level 24.5 C

Number of Unmarked Coho

Females 10 Males 20

Number of Adipose Only Coho

Females 19 Males 19

Number of Adipose/Rt. Max Coho

Females 20 Males 9

Number of Right Ventral Coho

Females 0 Males 1

Total Females 49 Total Males 49

Total number of coho captured 98

Number of Coho Released Upstream of the Fence Females : 49 Males : 49

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Fourteen dorsal fin tagged coho captured today. One pink salmon captured.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 8-Sep-01

Water Temp. 10 C

Water Level 24 cms

Number of Unmarked Coho

Females 10 Males 8

Number of Adipose Only Coho

Females 10 Males 5

Number of Adipose/Rt. Max Coho

Females 3 Males 6

Number of Right Ventral Coho

Females 2 Males 0

Total Females 25 Total Males 19

Total number of coho captured 44

Number of Coho Released Upstream of the Fence Females : 25 Males : 19

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Eight dorsal fin tagged coho captured today. Captured two pink salmon.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 9-Sep-01

Water Temp. 10 C

Water Level 23.5 cms

Number of Unmarked Coho

Females 4 Males 2

Number of Adipose Only Coho

Females 4 Males 3

Number of Adipose/Rt. Max Coho

Females 1 Males 1

Number of Right Ventral Coho

Females 0 Males 0

Total Females 9 Total Males 6

Total number of coho captured 15

Number of Coho Released Upstream of the Fence Females : 3 Males : 2

Number of Coho Removed for Broodstock Females : 6 Males : 4

Comments : Three dorsal fin tagged coho captured today. No pink or chinook salmon were captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 10-Sep-01

Water Temp. 10 C

Water Level 23.5 cms

Number of Unmarked Coho

Females 8 Males 8

Number of Adipose Only Coho

Females 15 Males 16

Number of Adipose/Rt. Max Coho

Females 8 Males 6

Number of Right Ventral Coho

Females 1 Males 1

Total Females 32 Total Males 31

Total number of coho captured 63

Number of Coho Released Upstream of the Fence Females : 28 Males : 27

Number of Coho Removed for Broodstock Females : 4 Males : 4

Comments : Eleven dorsal fin tagged coho and one dorsal fin tagged sockeye.
One chinook also captured.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 11-Sep-01

Water Temp. 10 C

Water Level 22.5 cms

Number of Unmarked Coho

Females 1 Males 0

Number of Adipose Only Coho

Females 1 Males 1

Number of Adipose/Rt. Max Coho

Females 1 Males 2

Number of Right Ventral Coho

Females 0 Males 0

Total Females 3 Total Males 3

Total number of coho captured 6

Number of Coho Released Upstream of the Fence Females : 3 Males : 3

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Two dorsal fin tagged coho captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 12-Sep-01

Water Temp. 11 C

Water Level 22 cms

Number of Unmarked Coho

Females 11 Males 7

Number of Adipose Only Coho

Females 6 Males 6

Number of Adipose/Rt. Max Coho

Females 4 Males 10

Number of Right Ventral Coho

Females 0 Males 0

Total Females 21 Total Males 23

Total number of coho captured 44

Number of Coho Released Upstream of the Fence Females : 21 Males : 23

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : 11 dorsal fin tagged coho captured. Also captured one pink salmon. Weather has been dry but cooler at night - water level is dropping.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 13-Sep-01

Water Temp. 10.5 C

Water Level 21.5 cms

Number of Unmarked Coho

Females 19 Males 9

Number of Adipose Only Coho

Females 14 Males 22

Number of Adipose/Rt. Max Coho

Females 19 Males 7

Number of Right Ventral Coho

Females 2 Males 0

Total Females 54 Total Males 38

Total number of coho captured 92

Number of Coho Released Upstream of the Fence Females : 54 Males : 38

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : 13 dorsal fin tagged coho captured. No other species caught today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 14-Sep-01

Water Temp. 11 C

Water Level 20 cms

Number of Unmarked Coho

Females 16 Males 14

Number of Adipose Only Coho

Females 14 Males 13

Number of Adipose/Rt. Max Coho

Females 8 Males 13

Number of Right Ventral Coho

Females 3 Males 0

Total Females 41 Total Males 40

Total number of coho captured 81

Number of Coho Released Upstream of the Fence Females : 41 Males : 40

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : 17 dorsal fin tagged coho captured. Also captured one sockeye and one dolly varden/bull trout.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 15-Sep-01

Water Temp. 11.5 C

Water Level 20 cms

Number of Unmarked Coho

Females 7 Males 7

Number of Adipose Only Coho

Females 3 Males 4

Number of Adipose/Rt. Max Coho

Females 6 Males 2

Number of Right Ventral Coho

Females 0 Males 0

Total Females 16 Total Males 13

Total number of coho captured 29

Number of Coho Released Upstream of the Fence Females : 16 Males : 13

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured four dorsal fin tagged coho. No other species captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 16-Sep-01

Water Temp. 11 C

Water Level 20 cms

Number of Unmarked Coho

Females 1 Males 1

Number of Adipose Only Coho

Females 1 Males 2

Number of Adipose/Rt. Max Coho

Females 4 Males 3

Number of Right Ventral Coho

Females 0 Males 0

Total Females 6 Total Males 6

Total number of coho captured 12

Number of Coho Released Upstream of the Fence Females : 6 Males : 6

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured three dorsal fin tagged coho.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 17-Sep-01

Water Temp. 11 C

Water Level 20 cms

Number of Unmarked Coho

Females 17 Males 17

Number of Adipose Only Coho

Females 32 Males 30

Number of Adipose/Rt. Max Coho

Females 20 Males 12

Number of Right Ventral Coho

Females 1 Males 3

Total Females 70 Total Males 62

Total number of coho captured 132

Number of Coho Released Upstream of the Fence Females : 60 Males : 56

Number of Coho Removed for Broodstock Females : 10 Males : 6

Comments : About 25% of the max clips sampled are poor clips I.e. difficult to tell it is a max clip (only 1/4 to half of the max is missing).

20 dorsal fin tagged coho today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 18-Sep-01

Water Temp. 11 C

Water Level 19.5 cms

Number of Unmarked Coho

Females 16 Males 9

Number of Adipose Only Coho

Females 20 Males 12

Number of Adipose/Rt. Max Coho

Females 13 Males 5

Number of Right Ventral Coho

Females 0 Males 0

Total Females 49 Total Males 26

Total number of coho captured 75

Number of Coho Released Upstream of the Fence Females : 37 Males : 19

Number of Coho Removed for Broodstock Females : 12 Males : 7

Comments : 10 dorsal fin tagged coho today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 19-Sep-01

Water Temp. 10.5 C

Water Level 20 cms

Number of Unmarked Coho

Females 0 Males 4

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 1

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 5

Total number of coho captured 5

Number of Coho Released Upstream of the Fence Females : 0 Males : 5

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : 1 dorsal fin tagged coho

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 20-Sep-01

Water Temp. 10.5 C

Water Level 19 cms

Number of Unmarked Coho

Females 2 Males 2

Number of Adipose Only Coho

Females 3 Males 1

Number of Adipose/Rt. Max Coho

Females 4 Males 2

Number of Right Ventral Coho

Females 0 Males 0

Total Females 9 Total Males 5

Total number of coho captured 14

Number of Coho Released Upstream of the Fence Females : 9 Males : 5

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 21-Sep-01

Water Temp. 11 C

Water Level 18 cms

Number of Unmarked Coho

Females 15 Males 8

Number of Adipose Only Coho

Females 11 Males 4

Number of Adipose/Rt. Max Coho

Females 5 Males 0

Number of Right Ventral Coho

Females 2 Males 0

Total Females 33 Total Males 12

Total number of coho captured 45

Number of Coho Released Upstream of the Fence Females : 33 Males : 12

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : 3 dorsal fin tagged coho captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 22-Sep-01

Water Temp. 12 C

Water Level 20 cms

Number of Unmarked Coho

Females 3 Males 6

Number of Adipose Only Coho

Females 3 Males 2

Number of Adipose/Rt. Max Coho

Females 2 Males 3

Number of Right Ventral Coho

Females 0 Males 0

Total Females 8 Total Males 11

Total number of coho captured 19

Number of Coho Released Upstream of the Fence Females : 8 Males : 11

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : No dorsal fin tagged coho captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 23-Sep-01

Water Temp. 12 C

Water Level 23.5 cms

Number of Unmarked Coho

Females 5 Males 10

Number of Adipose Only Coho

Females 4 Males 3

Number of Adipose/Rt. Max Coho

Females 7 Males 4

Number of Right Ventral Coho

Females 0 Males 1

Total Females 16 Total Males 18

Total number of coho captured 34

Number of Coho Released Upstream of the Fence Females : 16 Males : 18

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : 3 dorsal fin tagged coho captured today. Leaf load on fence was moderate this morning due to heavy rains and winds last night. Took about 25 mins to clean the fence of debris. Four panels were raised and debris was raked through the open panels. Panels were replaced to normal position after fence cleaning was complete.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 24-Sep-01

Water Temp. 11 C

Water Level 32 cms

Number of Unmarked Coho

Females 62 Males 47

Number of Adipose Only Coho

Females 39 Males 41

Number of Adipose/Rt. Max Coho

Females 33 Males 18

Number of Right Ventral Coho

Females 3 Males 1

Total Females 137 Total Males 107

Total number of coho captured 244

Number of Coho Released Upstream of the Fence Females : 86 Males : 81

Number of Coho Removed for Broodstock Females : 0 Males : 26

Comments : 38 dorsal fin tagged coho captured today.
Captured one steelhead.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 25-Sep-01

Water Temp. 10.5 C

Water Level 34 cms

Number of Unmarked Coho

Females 96 Males 78

Number of Adipose Only Coho

Females 77 Males 90

Number of Adipose/Rt. Max Coho

Females 57 Males 54

Number of Right Ventral Coho

Females 4 Males 7

Total Females 234 Total Males 229

Total number of coho captured 463

Number of Coho Released Upstream of the Fence Females : 234 Males : 229

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : 72 dorsal fin tagged coho captured today. (15.55% of todays catch).

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 26-Sep-01

Water Temp. 10.5 C

Water Level 32 cms

Number of Unmarked Coho

Females 0 Males 11

Number of Adipose Only Coho

Females 7 Males 6

Number of Adipose/Rt. Max Coho

Females 7 Males 3

Number of Right Ventral Coho

Females 0 Males 0

Total Females 14 Total Males 20

Total number of coho captured 34

Number of Coho Released Upstream of the Fence Females : 14 Males : 20

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured 12 steelhead and one bull trout today. Five of the coho captured were dorsal fin tagged.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 27-Sep-01

Water Temp. 10 C

Water Level 30 cms

Number of Unmarked Coho

Females 1 Males 1

Number of Adipose Only Coho

Females 0 Males 1

Number of Adipose/Rt. Max Coho

Females 0 Males 1

Number of Right Ventral Coho

Females 0 Males 0

Total Females 1 Total Males 3

Total number of coho captured 4

Number of Coho Released Upstream of the Fence Females : 1 Males : 3

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured one dorsal fin tagged coho and 2 steelhead.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 28-Sep-01

Water Temp. 9 C

Water Level 28 cms

Number of Unmarked Coho

Females 2 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 2 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 4 Total Males 0

Total number of coho captured 4

Number of Coho Released Upstream of the Fence Females : 4 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 29-Sep-01

Water Temp. 10 C

Water Level 27 cms

Number of Unmarked Coho

Females 0 Males 1

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 1

Total number of coho captured 1

Number of Coho Released Upstream of the Fence Females : 0 Males : 1

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 30-Sep-01

Water Temp. 8 C

Water Level 26 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Held Open House at the fence for BC Rivers Day. Coho can be seen rolling in the pool downstream of the old fence sill, however, they seem reluctant to swim over the old fence sill.
Some whitefish are also evident in between the two fence sills.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 1-Oct-01

Water Temp. 8.5 C

Water Level 27 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 1 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 1 Total Males 0

Total number of coho captured 1

Number of Coho Released Upstream of the Fence Females : 1 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 2-Oct-01

Water Temp. 8.5 C

Water Level 27 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 1

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 1

Total number of coho captured 1

Number of Coho Released Upstream of the Fence Females : 0 Males : 1

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Coho still visible rolling in the pool downstream of the old fence sill.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 3-Oct-01

Water Temp. 8 C

Water Level 26.5 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 4-Oct-01

Water Temp. 8 C

Water Level 26 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 5-Oct-01

Water Temp. 8 C

Water Level 26 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : No other species captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 6-Oct-01

Water Temp. 8 C

Water Level 26 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : No other species captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 7-Oct-01

Water Temp. 8 C

Water Level 26 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : No other species captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 8-Oct-01

Water Temp. 6 C

Water Level 25 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 1 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 1 Total Males 0

Total number of coho captured 1

Number of Coho Released Upstream of the Fence Females : 1 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : One dorsal fin tagged coho captured.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 9-Oct-01

Water Temp. 5 C

Water Level 25 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 10-Oct-01

Water Temp. 5 C

Water Level 25 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 3 Males 0

Number of Adipose/Rt. Max Coho

Females 1 Males 0

Number of Right Ventral Coho

Females 1 Males 0

Total Females 5 Total Males 0

Total number of coho captured 5

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 5 Males : 0

Comments : No dorsal fin tagged coho captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 11-Oct-01

Water Temp. 5 C

Water Level 27 cms

Number of Unmarked Coho

Females 12 Males 30

Number of Adipose Only Coho

Females 27 Males 25

Number of Adipose/Rt. Max Coho

Females 15 Males 17

Number of Right Ventral Coho

Females 1 Males 1

Total Females 55 Total Males 73

Total number of coho captured 128

Number of Coho Released Upstream of the Fence Females : 45 Males : 64

Number of Coho Removed for Broodstock Females : 10 Males : 9

Comments : Conducted a beach seine today. Some adults were transferred to the Toboggan Cr. Hatchery for broodstock.
29 dorsal fin tagged coho captured in the seine set today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 12-Oct-01

Water Temp. 5 C

Water Level 30 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Captured 3 steelhead in the set but released them downstream of the fence.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 13-Oct-01

Water Temp. 5 C

Water Level 29 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Whitefish visible d/s of the fence. Very little leaf load.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 14-Oct-01

Water Temp. 4 C

Water Level 30 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : 20 to 30 whitefish wer observed d/s of the fence.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 15-Oct-01

Water Temp. 5 C

Water Level 30 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 16-Oct-01

Water Temp. 4 C

Water Level 31 cms

Number of Unmarked Coho

Females 7 Males 8

Number of Adipose Only Coho

Females 4 Males 7

Number of Adipose/Rt. Max Coho

Females 11 Males 12

Number of Right Ventral Coho

Females 0 Males 1

Total Females 22 Total Males 28

Total number of coho captured 50

Number of Coho Released Upstream of the Fence Females : 22 Males : 28

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : The pool d/s of the old fence sill was seined today. All coho released upstream of the fence were opercular punched as per usual procedure.

19 dorsal fin tagged coho captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 17-Oct-01

Water Temp. 3 C

Water Level 30 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Removed the floating plywood that offers the coho cover into the lead-in. The plywood was starting to freeze and it was sinking.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 18-Oct-01

Water Temp. 3 C

Water Level 28.5 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Observed about 12 coho d/s of the old fence sill.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 19-Oct-01

Water Temp. 3 C

Water Level 28 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 2 Males 2

Number of Adipose/Rt. Max Coho

Females 0 Males 1

Number of Right Ventral Coho

Females 0 Males 0

Total Females 2 Total Males 3

Total number of coho captured 5

Number of Coho Released Upstream of the Fence Females : 2 Males : 3

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Observed 12 to 15 coho just behind the fence as well as a large school of whitefish.

One dorsal fin tagged coho captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 20-Oct-01

Water Temp. 5.5 C

Water Level 28 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 21-Oct-01

Water Temp. 5 C

Water Level 29 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 1 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 1 Total Males 0

Total number of coho captured 1

Number of Coho Released Upstream of the Fence Females : Males :

Number of Coho Removed for Broodstock Females : Males :

Comments : One dorsal fin tagged coho captured today.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 22-Oct-01

Water Temp. 3.5 C

Water Level 30 cms

Number of Unmarked Coho

Females 9 Males 19

Number of Adipose Only Coho

Females 21 Males 20

Number of Adipose/Rt. Max Coho

Females 18 Males 12

Number of Right Ventral Coho

Females 2 Males 1

Total Females 50 Total Males 52

Total number of coho captured 102

Number of Coho Released Upstream of the Fence Females : 50 Males : 52

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Did a beach seine today. Captured 22 dorsal fin tagged coho today in the set.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 23-Oct-01

Water Temp. 3.5 C

Water Level 32 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 24-Oct-01

Water Temp. 3 C

Water Level 29 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 25-Oct-01

Water Temp. 3 C

Water Level 29 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 26-Oct-01

Water Temp. 2.5 C

Water Level 28.5 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 27-Oct-01

Water Temp. 4 C

Water Level 29 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 28-Oct-01

Water Temp. 4 C

Water Level 29 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 29-Oct-01

Water Temp. 2.5 C

Water Level 28 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments :

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 30-Oct-01

Water Temp. 3 C

Water Level 30 cms

Number of Unmarked Coho

Females 0 Males 0

Number of Adipose Only Coho

Females 0 Males 0

Number of Adipose/Rt. Max Coho

Females 0 Males 0

Number of Right Ventral Coho

Females 0 Males 0

Total Females 0 Total Males 0

Total number of coho captured 0

Number of Coho Released Upstream of the Fence Females : 0 Males : 0

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Tarps taken off the bottom panels of the fence in order to lower the water level in preparation for fence de-mobilization tomorrow.

UPPER BULKLEY RIVER COHO ASSESSMENT FENCE : 2001

Daily Coho Capture Records

Date : 31-Oct-01

Water Temp. 3 C

Water Level 28.5 cms

Number of Unmarked Coho

Females 0 Males 1

Number of Adipose Only Coho

Females 1 Males 1

Number of Adipose/Rt. Max Coho

Females 0 Males 1

Number of Right Ventral Coho

Females 0 Males 0

Total Females 1 Total Males 3

Total number of coho captured 4

Number of Coho Released Upstream of the Fence Females : 1 Males : 3

Number of Coho Removed for Broodstock Females : 0 Males : 0

Comments : Fence was completely removed today. No coho observed swimming upstream during fence removal.

One dorsal fin tagged coho captured today.

Upper Bulkley River Coho Assessment Fence Photographs : 2001

Photo #1 :UBR Fence showing panel tabs and space between the panels for self-cleaning

Photo #2 : UBR Fence showing tarps directing flow to "V" lead-in and plywood cover

Upper Bulkley River Coho Assessment Fence Photographs : 2001

Photo #3 :UBR Fence showing plywood cover and direction of attraction flow

Photo # 4 : UBR Fence dismantling – panels are removed. Note lead-in extension sitting on the trap box lid.

Upper Bulkley River Coho Assessment Fence Photographs : 2001

Photo # 5 :UBR Fence dismantling – grating removal

Photo # 6 : UBR Fence dismantling – live box and "A" frame loading onto flatdeck

Upper Bulkley River Coho Assessment Fence Photographs : 2001

Photo # 7 : "A" frame and storage shed loading onto flatdeck truck