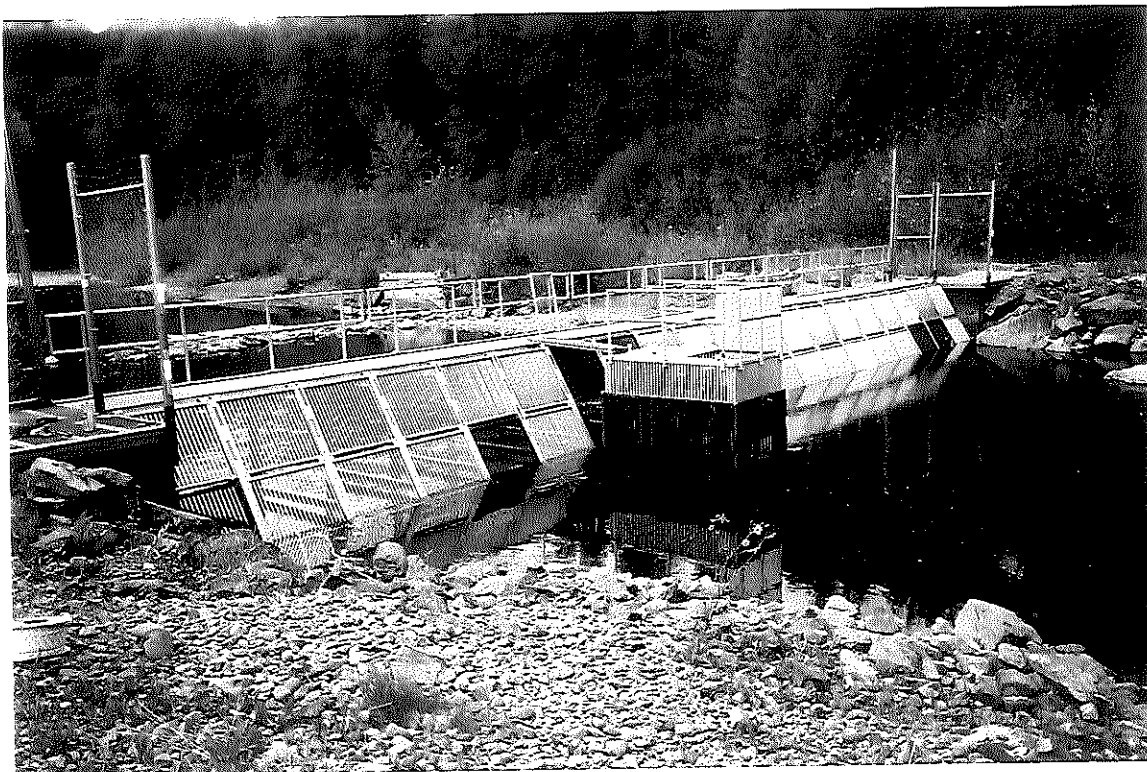


**Upper Bulkley River Coho Assessment Fence  
Program Report for 2004**



**Prepared By  
Brenda G. Donas, Community Advisor  
Oceans, Habitat and Enhancement Northcoast B.C.  
Fisheries and Oceans Canada**

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## **1.0 Executive Summary**

The Upper Bulkley River Coho Assessment Fence was co-funded by the Enhancement Support and Assessment Unit, Oceans, Habitat and Enhancement Northcoast and the Pacific Salmon Commission – Northern Fund.

The purpose of this assessment fence is to conduct an enumeration of upstream migrating coho by sex and mark type. The 2004 coho return consisted of wild coho and 2000 and 2001 brood hatchery coho from a fry vs smolt release study. The fry vs smolt release study commenced with 1998 brood UBR coho and will be completed when the four year old return data has been collected from 2001 brood UBR coho.

The fence was installed on August 17<sup>th</sup> to August 19<sup>th</sup>, 2004 and began fishing the evening of August 19<sup>th</sup>, 2004. The fence was to be operated daily, 24 hours per day, from August 19, 2004 until October 31<sup>st</sup>, 2004, however, high water caused some interruptions in fish counting and sampling. The fence ceased operating the afternoon of October 25<sup>th</sup> due to high water and the lack of coho entering the trap and being observed just downstream of the fence.

Incidental catches of steelhead, bull trout, whitefish, pink, sockeye and chinook were recorded as part of the daily catch data. DNA samples were taken from all sockeye salmon captured as requested by Stock Assessment Division.

Dorsal fin tagged coho were enumerated and dorsal fin tags were removed and tag color and number were recorded as part of the daily catch data. The dorsal fin tag data contributes to the Bulkley/Morice coho population estimate.

Approximately 6% of the return were marked coho from the 2000 brood fry releases. The 2001 brood fry and smolt released returning adults comprised 65% and 29% respectively of the coded wire tag (CWT) return to the UBR fence.

A total of 380 coho were enumerated through the Upper Bulkley River fence. This is a much lower escapement than was expected and the estimated escapement was approximately 3,000 coho (using biostandard survival rates).

## **Acknowledgements**

The Upper Bulkley River Coho Assessment Fence was installed by Eddie Young, Sharon Hartwell, Shannon Haftner, Cory Koenig, Marc Fradette and Brenda Donas. The fence operation crew consisted of Eddie Young, Marc Fradette, Sharon Hartwell, Brenda Donas and Shannon Haftner. Thanks to the fence operations crew for their hard work and enthusiasm especially during inclement weather conditions.

The fence was de-mobilized by Eddie Young, Cory Koenig, Shannon Haftner, Sharon Hartwell, Marc Fradette and Brenda Donas.

Thanks to the District of Houston for permitting the storage of the fence components in the District of Houston Works Yard.

Thanks to Walter Joseph and the Wet'suwet'en Fisheries staff for conducting coho tag recoveries at the Moricetown Food Fishery. Thanks also to Barry Finnegan, Stock Assessment Division, for organizing the CWT head sampling at Moricetown.

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## **2.0 Background Information**

The Upper Bulkley River Coho Assessment Fence is located approximately 4 kms upstream from the confluence of the Morice and Upper Bulkley Rivers. Funding for fence design, construction and operation from 1998 to 2003 was provided by the Strategic Stock Enhancement(SSE) Program. Funding for operation of the 2004 UBR Fence Program was provided by Fisheries and Oceans Canada : Oceans, Habitat and Enhancement and the Pacific Salmon Commission – Northern Fund.

The objective of the SSE program was to protect salmon stocks that were at risk of extirpation. In 1997, the Upper Bulkley River (UBR) coho stock was identified as a conservation concern by the Coho Response Team. UBR coho escapements, as enumerated at the Upper Bulkley River fence, in the early to mid 1990's were as low as 100 spawners. The purpose of the SSE program on Upper Bulkley River coho was to maintain the genetic integrity of that stock by increasing the number of spawners. To increase the number of spawners, two age classes of releases were conducted, fry and smolt releases. The fry were released into under-utilized habitat within Buck Creek. The fry would be subjected to natural selection pressures that the smolt group would not be subjected to. Smolts were also released into Buck Creek for the 1998 to 2000 brood years. 2001 brood fry were released into Buck Creek and the 2001 brood smolts were released to the Upper Bulkley River.

Each of the fry and smolt release groups were coded wire tagged and in 2001 the smolt release group received a right maxillary clip. The presence of the right maxillary clip allows for visual differentiation of fry and smolt returning adults at the UBR fence thereby reducing the number of coho to sacrifice for tag decoding.

The fence spans a 24.5 m width of the Upper Bulkley River and allows a fairly complete enumeration of upstream migrating coho adults. All upstream migrating adults must enter the live trap. Once captured, all adults are examined for external marks(adipose, right maxillary and ventral clips and presence of dorsal fin tags), species and sex. One in every 8 adipose clipped coho was to be sacrificed for the head and one in every ten wild fish was to be sampled for scales. Due to a low escapement, sampling at the fence included only 22 coho for scale samples and only 19 coho for CWT heads. Only 17 heads were de-coded at time of this report.

The 2000 and 2001 brood fry release groups were adipose clipped only and therefore visual identification of those two release groups was not possible. Therefore, a number of adipose only clipped coho adults were sacrificed at the UBR fence to determine adult contribution by tag code.

A number of Adipose/right maxillary coho were sacrificed to determine four year old contribution.

Approximately 130 adipose clipped coho were sacrificed at the Moricetown Canyon and this allows for a comparison of Toboggan Creek and Upper Bulkley tag groups present in the canyon. Stock Assessment Division expands the tag numbers to estimate the number of coho that should return to the Upper Bulkley River fence (personal communication with Barry Finnegan, Stock Assessment Division Biologist, Northcoast BC).

To assist in determining the number of coho spawning downstream of the fence, redd measurements are usually taken. In 2004, due to high water and poor visibility, redd measurements could not be conducted. Therefore, there is no estimate of the number of coho that spawned downstream of the fence.

## **2.1 Fence Operations**

The Upper Bulkley River(UBR)Coho Assessment Fence was installed from August 17<sup>th</sup> to 19<sup>th</sup>, 2004. The fence was fully operational and fishing by the evening on August 19<sup>th</sup>, 2004. Due to high water and no coho being counted through the fence, the fence was pulled out commencing October 25<sup>th</sup>, 2004.

The fence was installed as per previous years procedures. Tarps were placed along the bottom panels so that flow was forced upwards and through the spacer between the top and bottom panels. This made the fence somewhat self-cleaning during low water levels, which reduced the amount of labour required during periods of heavy debris load on the fence. The tarps were placed in such a way that most of the flow was forced through the "V" lead-in to the live trap. This assisted in attracting fish into the live trap.

Daily fence operations included taking a water level and water temperature measurement from an established limnology station. Fence panels were cleaned of debris as required. All coho trapped in the live box were counted and mark type and sex recorded.

Every eighth adipose clipped coho was to be sacrificed for the head and every tenth unmarked(wild) coho was to be sampled for scales. All coho released upstream of the fence were opercular punched. A portion of the coho that were captured were transported to the Toboggan Creek hatchery for use as broodstock.

Any dorsal fin tagged coho that were captured were sampled for sex and mark type and the dorsal fin tags were removed. Removal of the dorsal fin tags allowed for re-examination of the fin tag color and number for quality control purposes.

During times of heavy debris load, the fence was attended to as required. During extremely high water and heavy debris loads, the top fence panels were pulled one at a time to allow for debris cleaning.

Fence panels were replaced once cleaning was complete. No fish were observed migrating past the open panel sections during panel cleaning.

However, during the peak high water/heavy debris events on Sept 24<sup>th</sup> and from October 12<sup>th</sup> to 18<sup>th</sup>, twelve of the top panels were left out to reduce debris level against the fence. During that time, 40 coho were visually counted over the panels of which one coho had a green dorsal fin tag. Those 40 coho were apportioned as to mark type and sex based on mean proportions throughout the run timing.

Any adipose clipped coho carcasses that floated against the fence were checked for the presence of an opercular punch and a hatchery mark and the heads were removed. All heads were numbered using E-tags and recovery date was recorded.

Fence de-mobilization began on October 25<sup>th</sup> when all top fence panels were pulled. The bottom panels were removed on October 26<sup>th</sup> and 27<sup>th</sup> and the remainder of the fence was removed on November 1<sup>st</sup>, 2004. Fence components are in storage at the District of Houston Works Yard on Nadina Ave, Houston, BC.

### **3.0 Results and Discussion**

The 2004 coho return consisted of four year old returns from the 2000 brood year and three year old returns from the 2001 brood year. The hatchery contribution resulted from CWT releases of 30220 fry and 30008 smolts from the 2000 brood and returns from CWT releases of 47750 fry and 23220 yearlings from the 2001 brood.

A total of 164 (43%) females and 216 (57%) males were enumerated at the fence for a fence count of 380 coho. Of those 380 coho, 105 (27.5%) were adipose only clipped, 44 (11.6 %) were Adipose/right maxillary clipped(Ad/Rmax) and 231 (60.8%) were unmarked coho. (Refer to Appendix A for all fence capture data).

A total of 13 females and 11 males were removed for use as broodstock at the Toboggan Creek hatchery. A total of 14 males and 5 females were removed for CWT sampling.

### **3.1 Estimated Escapements vs. Actual Escapement**

It is important to consider a comparison of expected escapements to actual escapements due to straying of Upper Bulkley coho and possible differences between Toboggan Creek and UBR coho distribution in the Alaskan commercial fisheries. Stray rate has not been precisely defined however, UBR coded wire tagged coho have been recovered at the Toboggan Creek fence and in the Morice River. In 2003, one marked UBR coho was recovered at the Babine River fence.

A difference in distribution in the Alaskan commercial fishery could result in differences in exploitation rates between the Toboggan Creek and UBR coho.



A difference in exploitation rate and/or distribution in Alaskan commercial fisheries between those two stocks, would result in an in-accurate escapement estimate when using the Toboggan Creek stock as the index stock. Preliminary data from the 2004 Alaskan fishery CWT recoveries shows that there is a difference in distribution in the fisheries. (Refer to Appendix B for Alaskan fishery preliminary results). Toboggan Creek coho are captured in troll, drift net, purse seine and sport fisheries whereas UBR coho are caught only in the troll fishery.

There are various methods that have been investigated to determine the expected number of marked coho that should return to the Upper Bulkley River fence. This projection has been investigated due to UBR coho straying to other systems. UBR marked coho have been recovered at the Toboggan Creek fence and in the Morice River. If stray rate can be quantified, then a more accurate survival rate can be determined.

In the past, the data analysis methods have shown a difference in smolt to adult survival between Toboggan Creek and UBR coho, based on CWT recoveries in the Alaskan and BC commercial fisheries and fence counts. Survival rates of the Upper Bulkley smolt group have been consistently lower than the Toboggan Creek coho and some data analysis methods have shown that the UBR coho survive at rates of less than 60% that of the Toboggan Creek coho (personal communication with Barry Finnigan, Stock Assessment Biologist-Northcoast). These differences have prompted some investigation into how to best estimate expected return to the UBR fence so that survival rate comparisons can be more accurate.

The following methods are being investigated to estimate escapement to the UBR :

- Alaskan tag recoveries – involves a comparison of the Toboggan and UBR coho tags recovered in the Alaskan fishery and then uses the CWT returns to the Toboggan Creek fence to estimate the number of CWT's that should have returned to the UBR fence.
- Use biostandard survival rates to calculate escapement
- Use the Moricetown fishery data to look at the ratio of Toboggan Creek and UBR tags and use the escapement at the Toboggan Creek fence to estimate the number of CWT's that should return to the UBR fence
- Use the numbers of coho counted through the UBR fence only (i.e. use hard numbers with no estimates).

The methods listed above have the following issues :

- Estimation of CWT escapement based on Alaskan fishery data would not be accurate if the Toboggan Creek coho distribution in the Alaskan fishery differs from UBR coho. Recent data from the Alaskan commercial fishery show that there is a difference in distribution in the troll, seine and driftnet fisheries between the Toboggan Creek and Upper Bulkley River coho. Historical CWT recoveries in Canadian fisheries have shown some UBR coho CWT recoveries in Central Coast fisheries (personal communication with Barry Finnegan, Stock Assessment Biologist – Northcoast).
- Central Coast fisheries included some directed fisheries on coho in 2004 however, due to budget constraints, CWT sampling was not conducted (personal communication with Lyle Enderud – Central Coast Resource Management).
- Biostandard survival rates tend to be higher than the actual survival rates to the UBR therefore, using biostandard survival rates would over-estimate the number of CWT's that should return.
- Moricetown fishery data may contain sampling biases and the number of CWT heads submitted for tag decoding is sometimes low.
- Using escapement to the fence only does not consider any coho spawning downstream of the fence or UBR coho straying to nearby streams.

Estimated escapements based on biostandard survival rates and the following criteria are shown in Table 1 :

- Hatchery smolt biostandard survival rate is 2.29% (smolt to adult)
- Hatchery fry biostandard survival rate is 1.2% (fry to adult)
- Wild egg to fry biostandard survival rate is 15%
- Wild fry to adult biostandard survival rate is 1.2%
- The harvest rate used was 29% which is the estimated harvest rate for UBR coho.
- There is a differential mortality rate of 33.4% on right maxillary clipped coho
- The proportion of four year olds returning from fry releases and from wild coho is 40%
- Coho released as hatchery smolts all returns as three year olds

Total coho escapement to the UBR fence was estimated at 3,393 coho (Table 1). The mark rate was estimated at 21.4% with an estimated 725 adipose clipped coho expected to return. Actual adipose clip return was 149 coho adults or 39% of the escapement to the fence. The wild component of the escapement was estimated at 2,669 coho and the actual wild escapement to the fence was 231 coho.

An escapement comparison of 2001 brood year CWT's returning from smolt releases to the UBR fence using Alaskan data, estimates that for every 18.5 Toboggan Creek coho caught there is 1 UBR coho caught.

A total of 536 marked Toboggan Creek coho returned to the Toboggan fence. Using the Toboggan Creek fence as the standard and the Alaskan catch ratio of TC/UBR coho, we would expect 39 CWT coho from smolt releases at the UBR fence. This estimation considers the differential survival rate of 33.4% for right maxillary clipped coho. The actual number of 2001 brood coho returning from smolt releases was 44 coho.

**Table 1 : Estimated Escapement to the UBR in 2004  
Projected Wild Returns for 2004**

<u>Brood Year</u>	<u>No. Females</u>	<u>Egg Fec</u>	<u>Est. Egg Deposition</u>	<u>Total Fry Production</u>	<u>Total Adult Prod</u>	<u>2004 Contributions to Escapement</u>	
						<u>Three's</u>	<u>Fours</u>
2000	49	3108	152292	22844	274	0	78
2001	1087	3108	3378396	506759	6081	2591	0

**Projected Hatchery Returns for 2004**

<u>Brood Year</u>	<u>No. Fry Release</u>	<u>No Smolts Released</u>	<u>Total Adult Prod from Fry</u>	<u>Total Adult Prod from smolt</u>	<u>2004 Contributions to Escapement</u>	
					<u>Threes</u>	<u>Fours</u>
2000	30220	30008	363	687	0	103
2001	47750	23220	573	532	622	0
<b>Total Estimated Escapement for 2004</b>				<b>3393</b>	<b>Actual Esc. 380</b>	
<b>Estimated Hatchery Proportion</b>				<b>0.214</b>	<b>Actual Hat vs Wild 0.39</b>	
<b>Estimated Wild Proportion</b>				<b>0.786</b>	<b>0.61</b>	

The actual number of coho counted through the fence was 380 coho. The number of coho estimated to be spawning downstream of the fence could not be calculated due to high water and poor visibility in the river.

A detailed analysis of the methods of estimating expected returns to the Upper Bulkley River fence will not be included in this report. Methods of estimating escapement to the Upper Bulkley River will be included in the Strategic Stock Enhancement Program Final Report (in progress).

### 3.2 Adipose/CWT and Ad/Rmax/CWT Coho

A total of 149 hatchery coho were enumerated at the Upper Bulkley River fence. Of those hatchery coho, 44 had adipose/right maxillary clips and 105 were adipose only clipped. The adipose only clipped group consisted of both 2000 and 2001 brood year fry. There were no 2000 brood smolt released adults recovered at the fence.

Tag recoveries from Moricetown are shown in Table 2. Recoveries of marked coho were low with only 24 Upper Bulkley River marked heads being recovered at Moricetown Canyon and only 19 heads recovered at the UBR fence. Differences in the proportions of tags recovered at Moricetown Canyon and the UBR fence could be due to straying of UBR coho downstream of the UBR and/or biases in sampling rates at Moricetown Canyon.

**Table 2 : Moricetown Coho CWT Recoveries**

<u>Stock</u>	<u>Brood Year</u>	<u>Stage at Release</u>	<u>Tag Code</u>	<u>Number of Recoveries</u>	<u>Mark Type</u>	<u>Total Prop'ns by Code</u>	<u>UBR Prop at Mo by Code</u>	<u>UBR Prop at Fe by Code</u>
UBR	2001	fry	02-05-09	1	Ad	0.010	0.042	0
UBR	2001	smolt	18-22-08	2	ADRM	0.020	0.083	0.118
UBR	2001	smolt	18-22-09	6	ADRM	0.061	0.250	0.176
UBR	2001	fry	18-53-08	10	Ad	0.102	0.417	0.647
UBR	2000	fry	18-43-19	2	Ad	0.020	0.083	0
UBR	2000	fry	18-43-20	1	Ad	0.010	0.042	0
UBR	2000	fry	18-43-21	0	Ad	0.000	0.000	0.059
UBR	2000	smolt	18-48-28	1	Ad	0.010	0.042	0
UBR	2000	smolt	18-48-29	1	Ad	0.010	0.042	0
Toboggan	2001	smolt	18-35-27	23	Ad	0.235		
Toboggan	2001	smolt	18-35-28	30	Ad	0.306		
Toboggan	2001	smolt	18-35-29	21	Ad	0.214		
			No-pin	4	Unknown			

**102**

74 TC heads                      No. Tags 98  
 24 UBR heads                    UBR Tags 24

The expanded CWT recoveries for 1998 to 2001 brood UBR coho are shown in Table 3. Survival to escapement has been estimated based on UBR fence recoveries only and this data is preliminary. The data does not define or include stray rates of UBR coho in any survival rate calculations.

**Table 3 : UBR Fence CWT Recoveries for 1998 – 2001 Brood Years and Estimated Survival to Escapement**

Brood Year	Tag Code	Stage at Release	Expanded No at Fence	Number Released	Est Survival to Escapement
1998	18/34/30	fry	No heads taken for CWT sampling		
	18/34/31	fry	No heads taken for CWT sampling		
Totals			950	80440	0.012

1998	18/36/29	smolt	No heads taken	12493	
	18/36/30	smolt	No heads taken	12399	
	18/36/31	smolt	No heads taken	<u>11422</u>	
Totals			539	36314	0.015

1999	18/30/18	fry	62	20233	0.003
	18/30/19	fry	56	20171	0.003
	18/30/20	fry	50	23533	0.002
	18/43/16	fry	14	<u>5783</u>	<u>0.002</u>
Totals			182	69720	0.003

1999	18/35/39	smolt	19	11173	0.002
	18/35/40	smolt	38	11076	0.003
	18/35/41	smolt	<u>19</u>	<u>11101</u>	<u>0.002</u>
Totals			76	33350	0.002

2000	18/43/19	fry	5	10087	0.000
	18/43/20	fry	8	10079	0.001
	18/43/21	fry	<u>16</u>	<u>9805</u>	<u>0.002</u>
Totals			29	29971	0.001

2000	18/48/28	smolt	25	14802	0.002
	18/48/29	smolt	<u>12</u>	<u>14905</u>	<u>0.001</u>
Totals			37	29707	0.001

2001	18/53/08	fry	96		Incomplete
	02/05/09	fry	0		Incomplete
Totals					

2001	18/22/08	smolt	18		Incomplete
	18/22/09	smolt	26		Incomplete

A summary of the CWT data is included in Appendix B.

The timing of unmarked, adipose clipped and adipose/right maxillary clipped coho was similar as shown in Figure 1. Timing by week is presented in Appendix A and shows no differential timing between marked groups and marked vs wild coho.

### **3.3 Unmarked Coho**

A total of 231 unmarked coho were enumerated at the UBR fence. Of the unmarked coho, 100 (43 %) were females and 131 (57 %) were males.

Scale sampling was conducted on 22 unmarked(wild) coho at the Upper Bulkley fence of which 19 sets of scales were read. The age class data showed that 68.4% of the coho sampled for scales were Gilbert-Rich age 43 and 31.6% of the coho sampled were three year olds (Gilbert-Rich age 32). In previous years between 40% and 50% of the coho sampled have been four year old coho. Due to the low number of coho sampled for scales, the age data may not be representative of the UBR stock and therefore the capture data has not been expanded by age class.

### **3.4 Dorsal Fin Tagged Coho**

The purpose of the dorsal fin tagging program was to conduct a coho population estimate for the Bulkley/Morice system. Dorsal fin tags are applied to coho captured by seining just downstream of Moricetown Canyon and dorsal fin tagged coho are then re-captured at the Moricetown Canyon First Nations food fishery and at the Toboggan Creek and UBR fences. At time of this report, the total number of dorsal fin tagged coho upstream of the Moricetown Canyon was unknown . Therefore, the preliminary population estimate for Bulkley/Morice coho is also unknown at the time of this report.

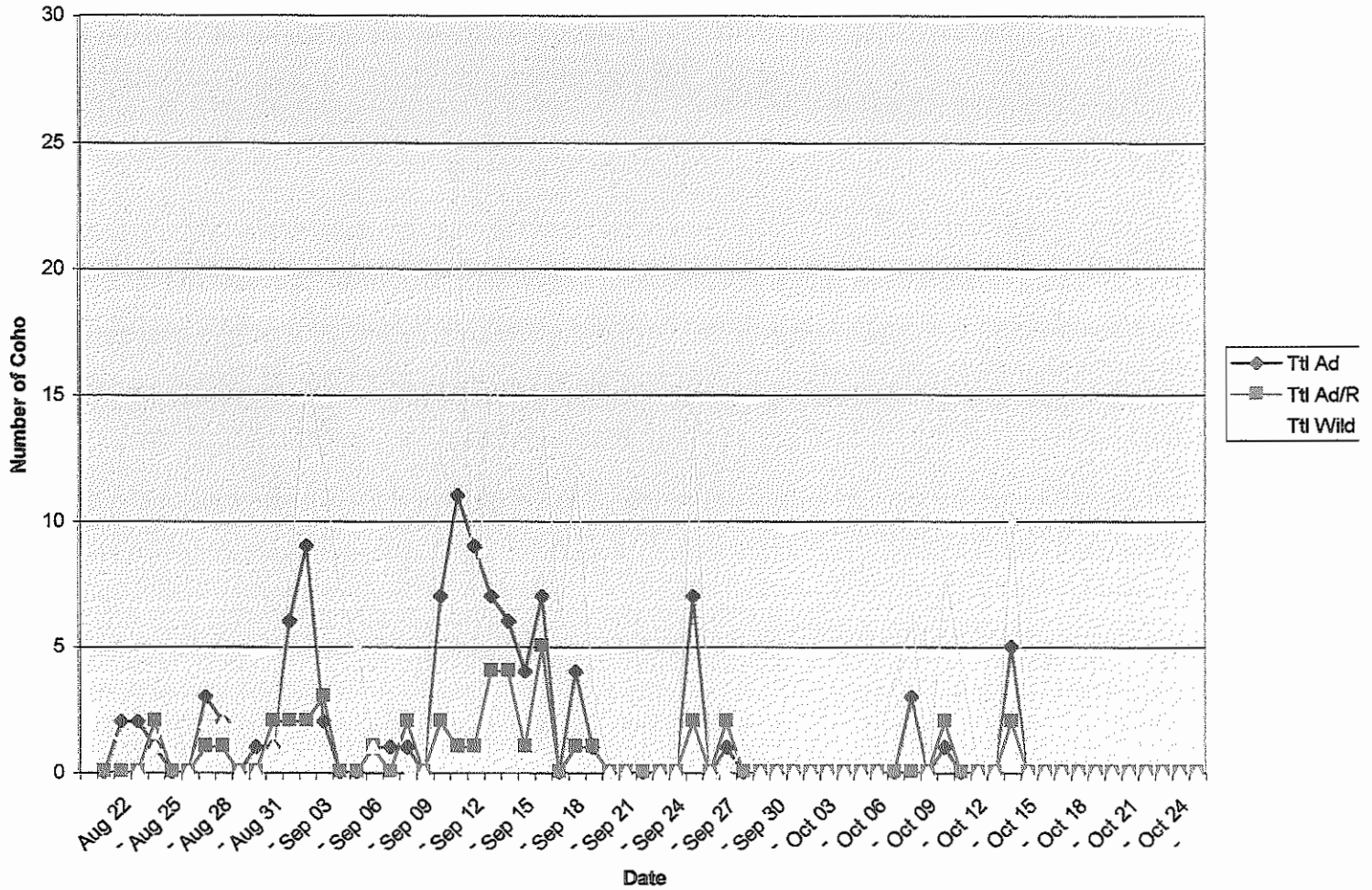
A total of 34 dorsal fin tags were recovered at the Upper Bulkley River fence therefore 9% of the coho enumerated at the fence were dorsal fin tagged. In comparison, the escapement at the Toboggan Creek coho fence was 2700 coho of which 293 coho were dorsal fin tagged. Therefore 10.9% of the Toboggan Creek coho were dorsal fin tagged.

UBR fence dorsal fin tag recoveries consisted of 10 tags from female coho, 23 dorsal fin tags from male coho and one tag from a coho that was not identified as to sex. This represents a sex ratio of 30% females and 70% males. This differs from the overall sex ratio at the fence which was 43% females and 57% males.

Refer to Appendix C for Dorsal Fin Tag Data which includes a summary of dorsal fin tag recovery proportions.

Figure 1

Upper Bulkley River Coho Fence 2004 : Ad vs ADRM vs Wild Timing



### **3.5 Redd Measurements**

During the 2003 fence operations, snorkel counts, streamwalks and redd measurements were conducted downstream of the fence to estimate the number of coho spawning downstream of the fence. However, during the 2004 fence operations, due to extreme high water conditions, downstream counts and redd measurements were not possible. During extreme high water conditions, the fence may have acted as a velocity barrier to upstream migrating coho. This is based on observations of coho attempting to jump over panels that had been pulled from October 12<sup>th</sup> to 18<sup>th</sup>, 2004. During the extremely high water, there were very few coho entering the trap although steelhead entered the trap throughout the high water periods.

### **3.6 Coho Escapement Comparisons**

Actual coho counts at the Upper Bulkley River fence range from a low of 22 adults enumerated in 1997 to 2,197 adults enumerated in 2001. Escapement counts through the Upper Bulkley River fence for 1997 to 2004 are shown in Figure 2. The mean escapement is 828 coho for 1997 to 2004. Escapements are still well below historical levels of 5,000 to 8,000 coho (UBR Coho Summary Report 2002 : R. Saimoto).

From 1997 to 2004, on average the proportion of females in the escapement has been 51% and proportion of males has been 49%. Ratio of males to females from 1997 to 2004 is shown in Figure 3.

Timing of males and females through the fence has been similar (Figure 4), and the timing between marked and unmarked (wild) coho has also been similar (Appendix A).



Figure 2 :Upper Bulkley River Coho Escapement Summary : 1996 to 2004

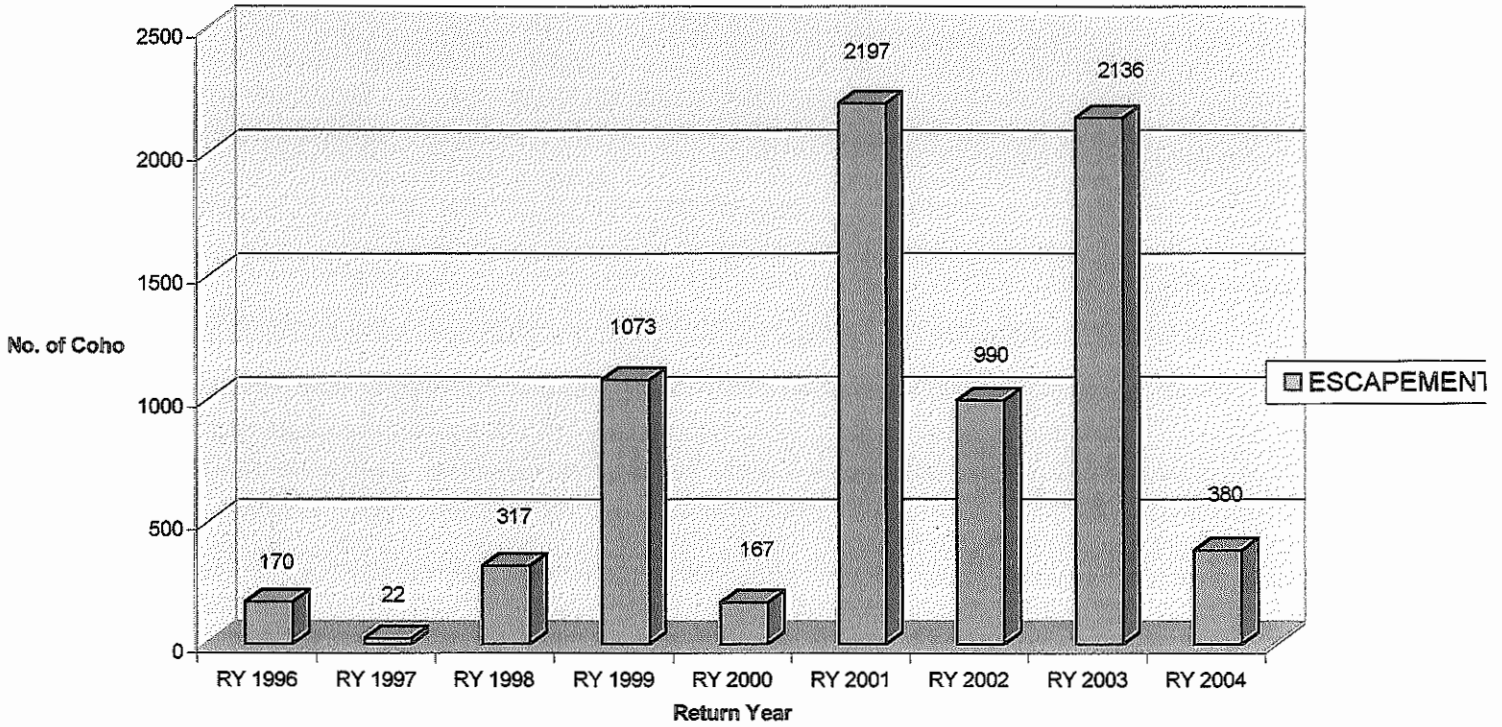


Figure 3 : UBR Coho Sex Ratio from 1997 – 2004

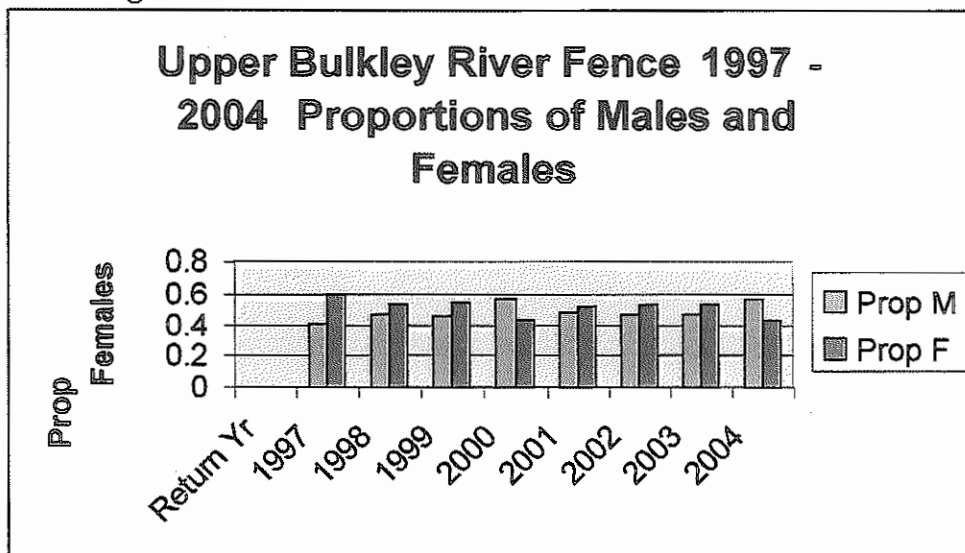
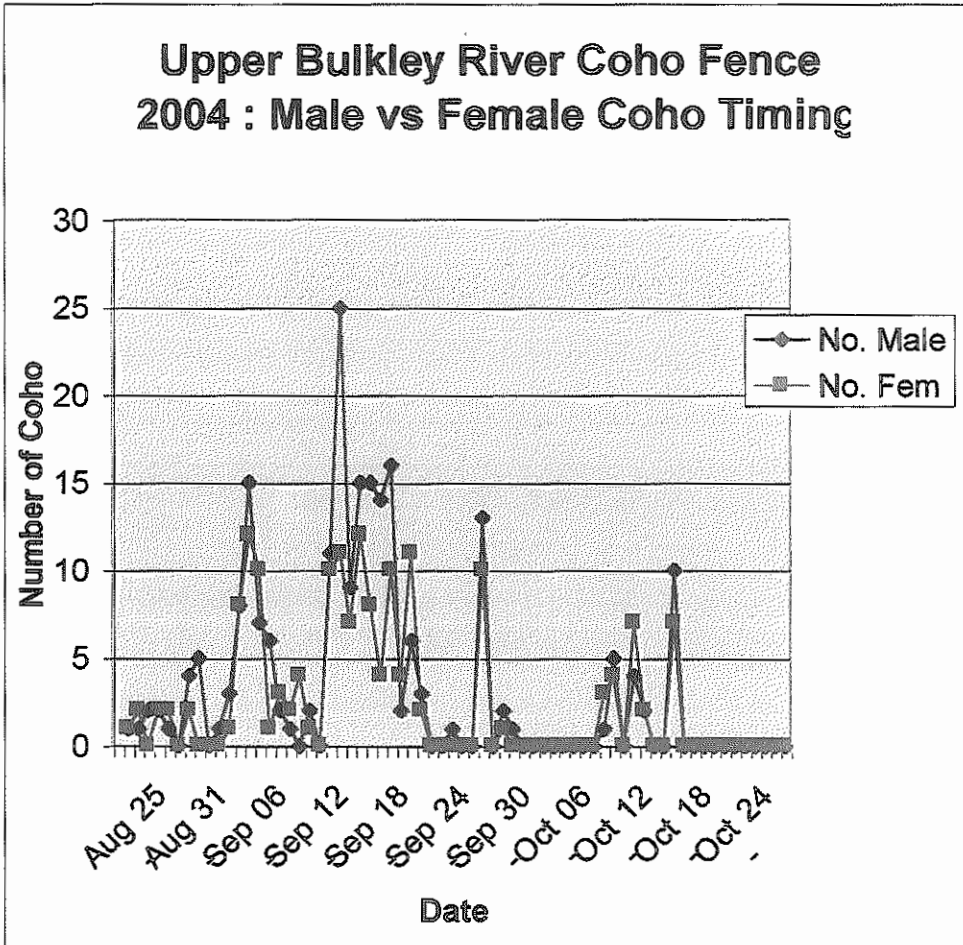
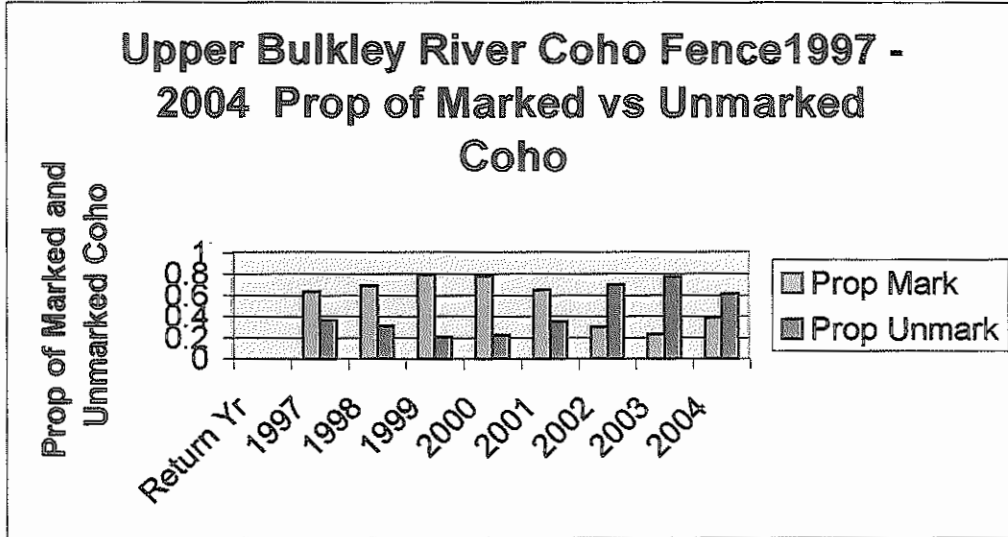


Figure 4 : Timing of Male vs Female Coho at the UBR Fence



The proportion of unmarked(wild) to hatchery coho for 1997 to 2004 is shown in Figure 5. In past years, the proportion of hatchery coho in the escapement has been as high as 80% and the mean proportion of hatchery coho in the escapement(1997 to 2004) is 50%.

Figure 5



**3.7 Coho Migration Timing**

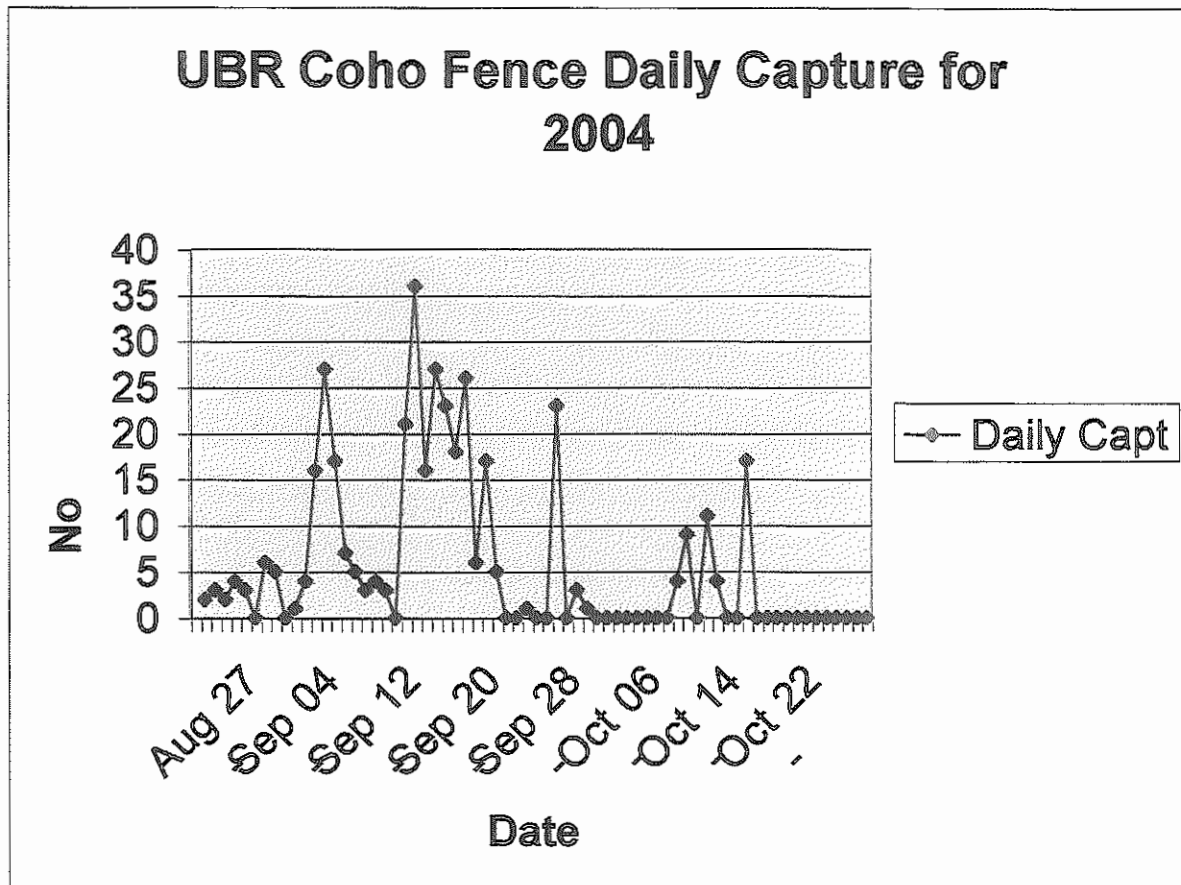
Coho began entering the live trap on August 20<sup>th</sup>, 2004. Peak migration occurred from September 9<sup>th</sup> to September 16<sup>th</sup> with a total of 190 coho migrating through the fence on those dates. This represents 50% of the escapement enumerated through the fence. Refer to Figure 6 for daily capture.

The cumulative frequency curve for coho migration timing for 1998 to 2004 is shown in Table 4.

Table 4 : Cumulative Timing for Upper Bulkley Coho 1998 to 2004

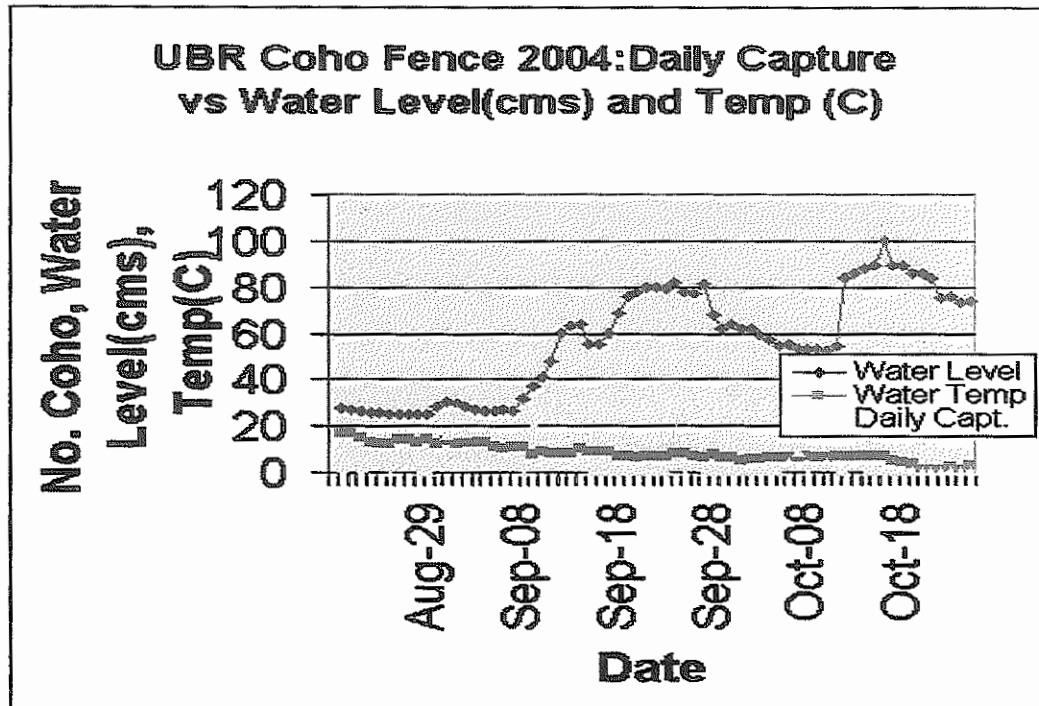
Return Yrs	10%	25%	50%	75%	90%
1998 – 2002	Sept 12	Sept 18	Sept 23	Oct 11	Oct 27
2002	Sept 15	Sept 18	Sept 20	Sept 24	Sept 30
2003	Sept 6	Sept 11	Sept 21	Sept 27	Oct 6
2004	Aug 30	Sep 3	Sep 11	Sep 16	Oct 6

Figure 6 : UBR Coho Fence Daily Capture : 2004



Peak coho migration through the fence coincided with an increase in water level around September 8<sup>th</sup>, 2004 (Figure 7). During the 2004 fence program, water level continued to rise after September 8<sup>th</sup> and eventually high water levels resulted in completion of the fence program by October 25<sup>th</sup>, 2004. The mean cumulative timing for 1998 to 2002 shows that 90% of the coho run is usually through the fence by October 27<sup>th</sup>. Based on the migration peaks at the fence for 2004, it is unlikely that large numbers of coho migrated through the fence after October 25<sup>th</sup>, 2004.

Figure 7 : UBR Coho Fence Daily Capture vs Water Level(cms) and Water Temp(°C)



### 3.8 Natural Egg Deposition and Estimated Returns from 2004 Brood Coho

A total of 146 females spawned naturally in the fall of 2004. Estimated egg deposition and subsequent adult production are listed in Table 5. Approximately 30,000 hatchery coho smolts will be released in the spring of 2006 and production from the enhanced coho is also included in Table 5. Exploitation rate has been set at 29 % (personal communication with Don Bailey, F.O.C. Biologist) and fecundity has been estimated at 3108 eggs per female based on previous years data from Toboggan Creek hatchery incubation records.

**Table 5 : Predicted Returns from 2004 Brood Coho to Escapement**

**UPPER BULKLEY RIVER COHO**

**Projected Wild Returns from 2004 Brood Coho**

Year	Brood No. Females	Egg Fec	Est. Egg Deposition	Total Fry Production	Total Adult Prod	2004 Contributions	
						Three's	Fours
2004	146	3108	453768	68065	817	348	232

Estimated Escapement from hatchery Releases of 30000 smolts 488

Total Estimated Escapement for 2007 836

Four year old contribution, which would return in 2008 has not been included.

Total escapement for 2007, using biostandard survival rates, an exploitation rate of 29% and a three year old return rate of 60% for wild coho, is estimated at 836 coho adults.

**4.0 Recommendations**

**Recommendation #1 : To complete the fry vs smolt release survival rate study, continue to operate the Upper Bulkley River Coho Assessment Fence in 2005.**

The fry vs smolt release survival study was conducted from the 1998 to 2001 brood years. Coho from the 2001 brood year will be returning in the 2004 and 2005 return years. Data to date has shown that approximately 40% of the adults from fry releases return as four year olds. Therefore to completely assess the 2001 brood, the fence must operate during 2005 to collect the CWT data from four year old returning coho.

Results will assist in determining if the enhancement strategy for Upper Bulkley River coho should be adjusted towards conducting fry releases and if releasing fry into under-utilized habitat is an acceptable method of protecting stocks that are a conservation concern.

**Recommendation #2 : Continue to sacrifice adipose clipped coho at the UBR fence during the 2005 return year.**

Marked coho have been sacrificed at the First Nations food fishery at the Moricetown Canyon and at the Upper Bulkley River fence. Due to in-season changes to the First Nations fishery, sampling rates at the Moricetown Canyon have not been consistent from year to year.

Marked coho should be sacrificed at the Upper Bulkley River fence for tag de-coding to ensure that the appropriate number of tags are de-coded and the proportions of fry and smolt returning adults can be determined. Consistent sampling can be accomplished at the UBR fence as every coho is handled to check for the presence of a mark.

**Recommendation #3 : 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. The UBR fence is also the principle means of determining escapement to the Upper Bulkley River. In 2005 there will be hatchery coho returning from the first year of fry releases into Bulkley Lake as well as four year old coho returning from the 2001 fry vs smolt release study. There will also be marked returns from the 2002 hatchery production smolt release group.

The fence allows monitoring of the proportions of wild(unmarked) and hatchery(marked) coho in the system. If naturally spawning hatchery coho are successful, then the proportion of wild(unmarked) coho in the escapement should continue to increase.

The Upper Bulkley River coho fence can also be used as a check against the Bulkley/Morice Population estimate. A rough population estimate can be calculated based on the number of dorsal fin tags enumerated at the fence.

**Recommendation #4 : Enhance the partnership with the Wet'suwet'en Fisheries Program on CWT head recovery and continue with in-season tag decoding.**

A commitment from the Wet'suwet'en Fisheries Program as to number of coho heads that will be recovered at Moricetown Canyon is required. In past years, the number of coho heads recovered has ranged from a low of 50 to about 290.

CWT coho heads are collected during the Wet'suwet'en food fishery at Moricetown Canyon and during the beach seining program. Coho that are sacrificed are used as food fish. The heads from the marked coho are submitted for in-season tag decoding.

The advantage to sacrificing coho at the Moricetown Canyon and during the beach seining program is that the coho being sacrificed are being utilized as First Nations food fish.

Tag recovery at Moricetown allows for a greater number of tags to be recovered than is feasible by sacrificing coho at the UBR fence only. In-season decoding of adipose clipped coho assists in ensuring that the appropriate number of tags are decoded so that the data can be used to calculate survival rates.

The Wet'suwet'en sampling program will require input from Enhancement Support and Assessment Unit as well as from Stock Assessment Division.

**Recommendation #5 : Fence sill repairs will be necessary prior to fence installation in 2005.**

The UBR fence sustained damage during the 2002 freshet and during fall floods in 2003 and 2004. Some of the shoes that hold the support "A" frames in place were bent and require straightening. Also, some of the wood planking has begun to lift which makes installation of the "A" frames difficult.

A budget will have to be identified for fence sill repairs.



## **APPENDIX A**

### **Contents**

Daily Capture Summary

UBR Fence 2004 : Operations Comments Log

UBR Coho Fence 2004 : Ad vs ADRM vs Wild Timing Graph

UBR Coho Fence 2004 : Ad vs ADRM vs Wild Timing by Week

UBR Coho Fence 2004 : Male vs Female Timing

UBR Coho Fence 2004 : Water Level and Temp Records

UBR Coho Cumulative Timing : 2004

UBR Coho Escapement Summary : 1997 - 2004

UBR Fence Chinook Capture Records 2004

UBR Fence Sockeye Capture Records 2004

UBR Fence Steelhead Capture Records 2004

Scale/Age Data

UPPER BULKLEY RIVER FENCE : 2004

DAILY COHO CAPTURE SUMMARY

Date	Ad		Ad/Rmax		Wild		Total		Total		Ttl Daily Capture	Cum Capture
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females		
Aug-20	0	0	0	0	1	1	1	1	1	1	2	2
Aug-21	1	1	0	0	0	1	1	1	2	2	3	5
Aug-22	2	0	0	0	0	0	2	0	0	0	2	7
Aug-23	1	0	1	1	0	1	2	2	2	2	4	11
Aug-24	0	0	0	0	1	2	1	2	2	3	14	14
Aug-25	0	0	0	0	0	0	0	0	0	0	0	14
Aug-26	1	2	1	0	2	0	4	2	2	6	20	20
Aug-27	2	0	1	0	2	0	5	0	0	5	25	25
Aug-28	0	0	0	0	0	0	0	0	0	0	0	25
Aug-29	1	0	0	0	0	0	1	0	0	1	1	26
Aug-30	0	1	2	0	1	0	3	1	1	4	30	30
Aug-31	3	3	1	1	4	4	8	8	8	16	46	46
Sep-01	7	2	2	0	6	10	15	12	12	27	73	73
Sep-02	0	2	2	1	5	7	7	10	10	17	90	90
Sep-03	0	0	0	0	6	1	6	1	1	7	97	97
Sep-04	0	0	0	0	2	3	2	3	3	5	102	102
Sep-05	0	1	0	1	1	0	1	2	2	3	105	105
Sep-06	0	1	0	0	0	3	0	4	4	4	109	109
Sep-07	0	1	2	0	0	0	2	1	1	3	112	112
Sep-08	0	0	0	0	0	0	0	0	0	0	112	112
Sep-09	5	2	1	1	5	7	11	10	10	21	133	133
Sep-10	7	4	0	1	18	6	25	11	11	36	169	169
Sep-11	5	4	0	1	4	2	9	7	7	16	185	185
Sep-12	6	1	2	2	7	9	15	12	12	27	212	212
Sep-13	2	4	3	1	10	3	15	8	8	23	235	235
Sep-14	2	2	1	0	11	2	14	4	4	18	253	253
Sep-15	5	2	1	4	10	4	16	10	10	26	279	279
Sep-16	0	0	0	0	2	4	2	4	4	6	285	285
Sub totals	50	33	20	14	98	70	168	117	117	285	285	

UPPER BULKLEY RIVER FENCE : 2004  
DAILY CAPTURE SUMMARY

Date	Ad		Ad/Rmax		Wild		Total		Total		Ttl Daily Capture	Cum Capture
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females		
Sep-17	1	3	0	1	5	7	6	11	17	302		
Sep-18	0	1	0	1	3	0	3	2	5	307		
Sep-19	0	0	0	0	0	0	0	0	0	307		
Sep-20	0	0	0	0	0	0	0	0	0	307		
Sep-21	0	0	0	0	1	0	1	0	1	308		
Sep-22	0	0	0	0	0	0	0	0	0	308		
Sep-23	0	0	0	0	0	0	0	0	0	308		
Sep-24	4	3	1	1	8	6	13	10	23	331		
Sep-25	0	0	0	0	0	0	0	0	0	331		
Sep-26	0	1	2	0	0	0	2	1	3	334		
Sep-27	0	0	0	0	1	0	1	0	1	335		
Sep-28	0	0	0	0	0	0	0	0	0	335		
Sep-29	0	0	0	0	0	0	0	0	0	335		
Sep-30	0	0	0	0	0	0	0	0	0	335		
Oct-01	0	0	0	0	0	0	0	0	0	335		
Oct-02	0	0	0	0	0	0	0	0	0	335		
Oct-03	0	0	0	0	0	0	0	0	0	335		
Oct-04	0	0	0	0	0	0	0	0	0	335		
Oct-05	0	0	0	0	0	0	0	0	0	335		
Oct-06	0	0	0	0	1	3	1	3	4	339		
Oct-07	1	2	0	0	4	2	5	4	9	348		
Oct-08	0	0	0	0	0	0	0	0	0	348		
Oct-09	1	0	1	1	2	6	4	7	11	359		
Oct-10	0	0	0	0	2	2	2	2	4	363		
Oct-11	0	0	0	0	0	0	0	0	0	363		
Oct-12	0	0	0	0	0	0	0	0	0	363		
Oct-13	3	2	1	1	6	4	10	7	17	380		
Oct-14	0	0	0	0	0	0	0	0	0	380		
Oct-15	0	0	0	0	0	0	0	0	0	380		
Oct-16	0	0	0	0	0	0	0	0	0	380		
Sub totals	10	12	5	5	33	30	48	47	95			

UPPER BULKLEY RIVER FENCE : 2004  
 DAILY CAPTURE SUMMARY

Date	Ad		Ad/Rmax		Wild		Total		Ttl Daily		Cum Capture
	Males	Females	Males	Females	Males	Females	Males	Females	Capture	Capture	
Oct-17	0	0	0	0	0	0	0	0	0	0	380
Oct-18	0	0	0	0	0	0	0	0	0	0	380
Oct-19	0	0	0	0	0	0	0	0	0	0	380
Oct-20	0	0	0	0	0	0	0	0	0	0	380
Oct-21	0	0	0	0	0	0	0	0	0	0	380
Oct-22	0	0	0	0	0	0	0	0	0	0	380
Oct-23	0	0	0	0	0	0	0	0	0	0	380
Oct-24	0	0	0	0	0	0	0	0	0	0	380
Oct-25	FENCE PULLED										
Totals	60	45	25	19	131	100	216	164	380		

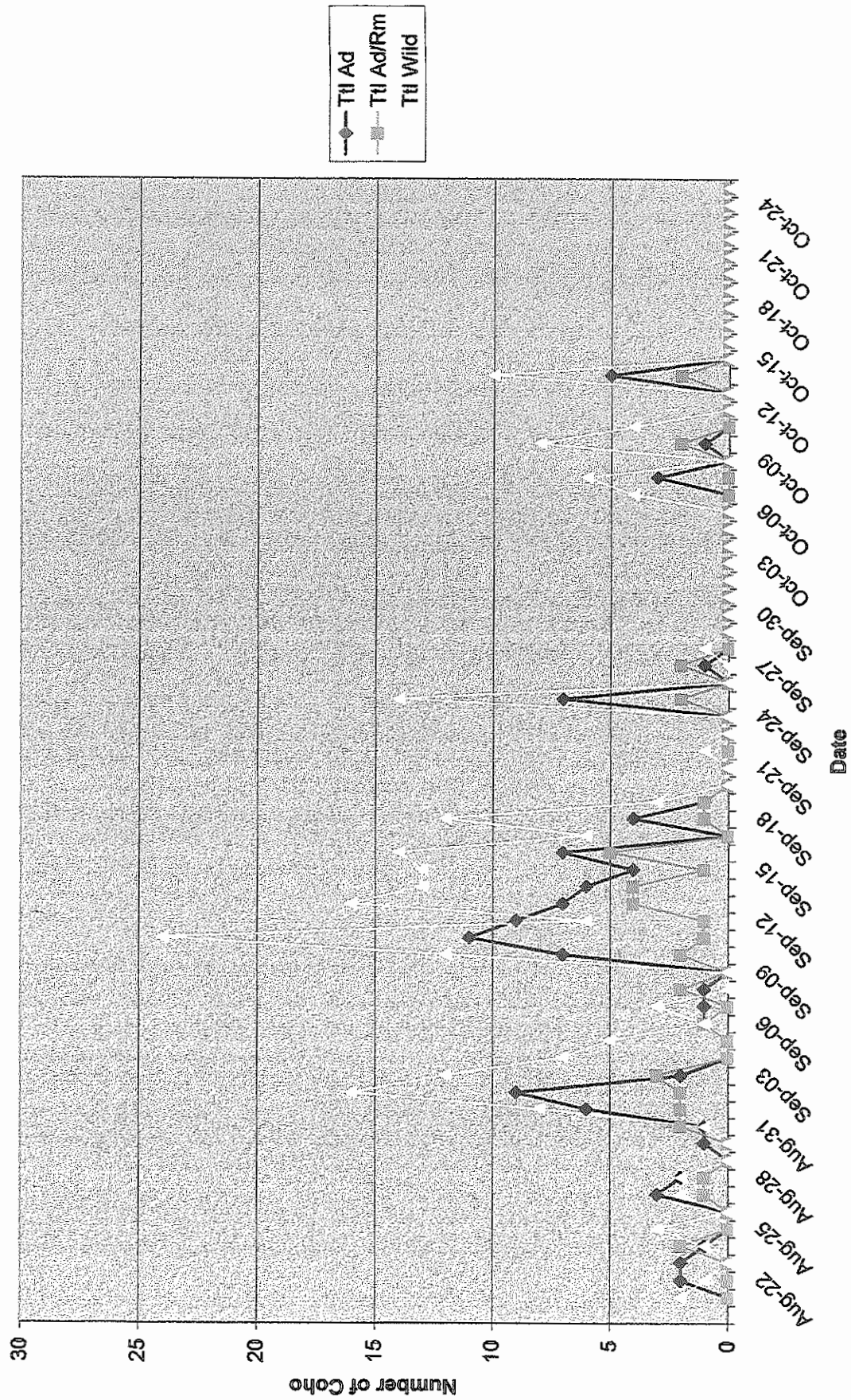
## Upper Bulkley River Coho Assessment Fence : 2004

### Comments

<u>Date</u>	<u>Comments</u>
Sep-18	Water level is rising.
Sep-19	Water level still rising and debris load getting heavier.
Sep-20	Water level is high and debris load is extremely heavy. Top fence panels were pulled out at 11:00 pm and fence did not fish until 0800 hrs the next morning.
Sep-21	High water and debris loads. Top panels were pulled for a time for cleaning and staff watched for fish over the pulled panels. One fish were seen migrating u/s of the fence during panel cleaning.
Sep-22	High water and debris loads continue. Top fence panels pulled and staff watched for fish migrating over the pulled panels. No fish observed going over panels.
Sep-23	High water and debris loads continue.
Sep-24	High water and very heavy debris load on the fence. Top panels pulled for a while and staff watched for fish migrating over the top of the pulled panels. From 5:00 pm to 7:00 pm staff observed 23 coho going over the pulled panels. One of those fish was a green dorsal fin tagged coho. Water level and debris load under control by 10:00 pm Note : 23 fish apportioned in spreadsheet by mark type and sex based on average proportions of Ad males/fem, ADRM males/fem and Wild males and fem to date.
Sep-27	High water and heavy debris load all day. Top panels were pulled for cleaning and 1 coho was observed going over the pulled panels during cleaning. Fence fishing all day.
Sep-28	Water level is decreasing however the debris load is quite heavy. Some coho observed rolling d/s of the fence. Fence fished all day.
Sep-29	Water level slowing going down. Heavy debris load continues and night time cleaning is still occuring. Fence is fishing all day. Lead in was widened today.
Sep-30	Water level is still decreasing slowly. Debris load is lessening. Coho observed rolling d/s of fence but coho are reluctant to enter the trap. By 11:00 pm there was a heavy debris load on the fence(beaver dams upstream broke) and the fence almost over-topped.
Oct-01	Whitefish coming through the fence again.
Oct-03	Holding two coho for Toboggan Creek hatchery. Coho are being left in the trap until there are enough coho for the TC staff to warrant picking them up.
Oct-04	Holding seven coho for TC hatchery staff.

- Oct-05 Continuing to hold those seven coho for TC staff. 133 whitefish counted over the fence.
- Oct-06 UBR Fence staff processed 4 coho over the fence.
- Oct-07 TC staff took 1 Ad male, 2 Ad females, 4 wild males and 2 wild females for broodstock
- Oct-08 A few coho in the trap being held for TC hatchery
- Oct-09 TC staff took 1 Ad male, 2 Wild males, 6 wild Females, 1 ADRM female and 1 ADRM male for broodstock
- Oct-10 TC staff took 2 wild males and 2 wild females for broodstock
- Oct-12 Water level becoming high again and debris load is extremely heavy. Top panels were pulled at 10:00 am and fence did not fish all day and all night. A total of 5 coho were observed going over the panels (5 coho per 6 hours of observations)
- Oct-13 Fence not fishing due to high water and heavy debris load. 8 coho observed over top panels in 6.5 hours of observations.
- Oct-14 Fence not fishing due to high water and heavy debris load. A total of 3 coho were counted over the top panels in 5.5 hours of observations. 1 coho is being held in the trap for TC staff.
- Oct-15 Fence not fishing. No coho were observed going over the top panels in 5 hours of observations.
- Oct-16 Fence not fishing. No coho were observed going over the top panels in 6 hours of observations.
- Oct-17 Fence not fishing. No coho observed going over the panels in 6 hours of observations.
- Oct-18 Fence not fishing until 2:00 pm. At 2:00 pm, the top panels were re-installed and the fence began fishing. There is no debris load on the fence however the water level is still quite high with about 34 cms of free-board on the top panels.

### Upper Bulkley River Coho Fence 2004 : Ad vs ADRM vs Wild Timing



**UPPER BULKLEY RIVER FENCE 2004 : AD VS AD/RM VS WILD TIMING**

Date      Ttl Ad      Ttl Ad/Rm   Ttl Wild

Aug-20	0	0	2	Week 1
Aug-21	2	0	1	
Aug-22	2	0	0	
Aug-23	1	2	1	Week 2
Aug-24	0	0	3	
Aug-25	0	0	0	
Aug-26	3	1	2	
Aug-27	2	1	2	
Aug-28	0	0	0	
Aug-29	1	0	0	
Aug-30	1	2	1	Week 3
Aug-31	6	2	8	
Sep-01	9	2	16	
Sep-02	2	3	12	
Sep-03	0	0	7	
Sep-04	0	0	5	
Sep-05	1	1	1	
Sep-06	1	0	3	Week 4
Sep-07	1	2	0	
Sep-08	0	0	0	
Sep-09	7	2	12	
Sep-10	11	1	24	
Sep-11	9	1	6	
Sep-12	7	4	16	
Sep-13	6	4	13	Week 5
Sep-14	4	1	13	
Sep-15	7	5	14	
Sep-16	0	0	6	
Sep-17	4	1	12	
Sep-18	1	1	3	
Sep-19	0	0	0	
Sep-20	0	0	0	Week 6
Sep-21	0	0	1	
Sep-22	0	0	0	
Sep-23	0	0	0	
Sep-24	7	2	14	
Sep-25	0	0	0	
Sep-26	1	2	0	
Sep-27	0	0	1	Week 7
Sep-28	0	0	0	
Sep-29	0	0	0	
Sep-30	0	0	0	
Oct-01	0	0	0	
Oct-02	0	0	0	
Oct-03	0	0	0	
Oct-04	0	0	0	Week 8
Oct-05	0	0	0	

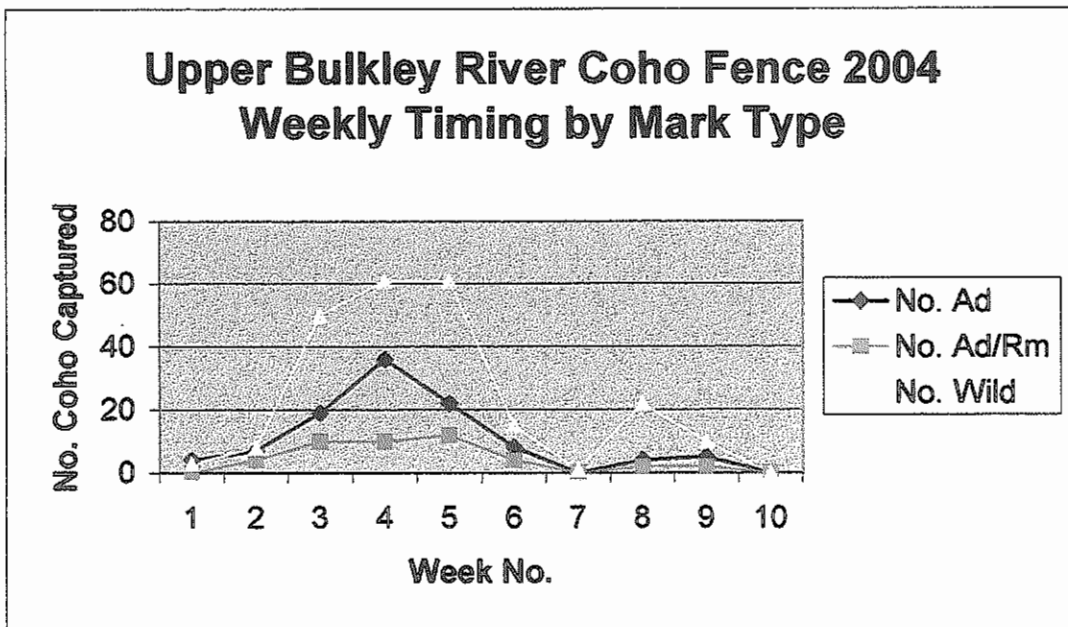


Oct-06	0	0	4	
Oct-07	3	0	6	
Oct-08	0	0	0	
Oct-09	1	2	8	
Oct-10	0	0	4	
Oct-11	0	0	0	Week 9
Oct-12	0	0	0	
Oct-13	5	2	10	
Oct-14	0	0	0	
Oct-15	0	0	0	
Oct-16	0	0	0	
Oct-17	0	0	0	
Oct-18	0	0	0	Week 10
Oct-19	0	0	0	
Oct-20	0	0	0	
Oct-21	0	0	0	
Oct-22	0	0	0	
Oct-23	0	0	0	
Oct-24	0	0	0	
Oct-25	Fence Pulled			Week 11
Oct-26				
Oct-27				
Oct-28				
Oct-29				
Oct-30				
Oct-31				
Totals	105	44	231	380

% Ad 0.28  
 % ADRM 0.12  
 % Wild 0.61

**Upper Bulkley River Coho Fence 2004 : Weekly Run Timing**

Week	No. Ad	No. Ad/Rm	No. Wild	
1	4	0	3	
2	7	4	8	
3	19	10	50	
4	36	10	61	
5	22	12	61	
6	8	4	15	
7	0	0	1	
8	4	2	22	
9	5	2	10	
10	0	0	0	
11	0	0	0	
	105	44	231	380



**UPPER BULKLEY RIVER FENCE : 2004**

**MALE VS FEMALE TIMING**

**Date      No. Male   No. Fem**

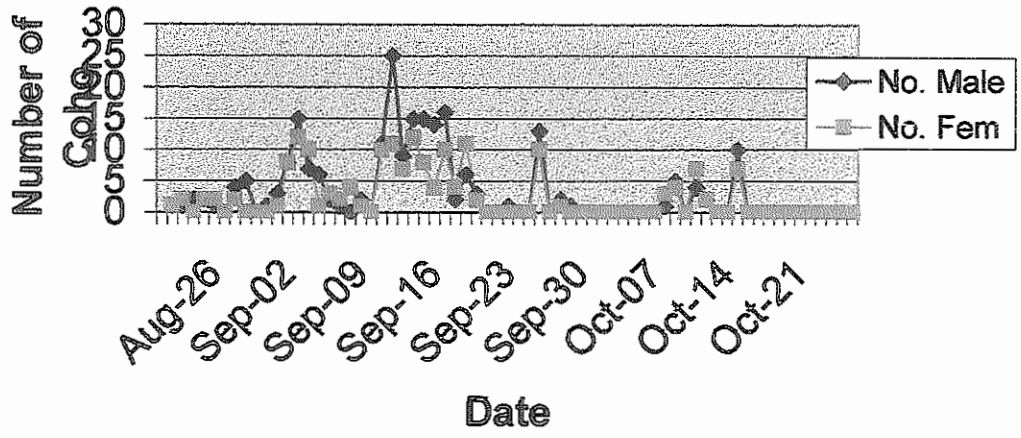
Aug-20	1	1
Aug-21	1	2
Aug-22	2	0
Aug-23	2	2
Aug-24	1	2
Aug-25	0	0
Aug-26	4	2
Aug-27	5	0
Aug-28	0	0
Aug-29	1	0
Aug-30	3	1
Aug-31	8	8
Sep-01	15	12
Sep-02	7	10
Sep-03	6	1
Sep-04	2	3
Sep-05	1	2
Sep-06	0	4
Sep-07	2	1
Sep-08	0	0
Sep-09	11	10
Sep-10	25	11
Sep-11	9	7
Sep-12	15	12
Sep-13	15	8
Sep-14	14	4
Sep-15	16	10
Sep-16	2	4
Sep-17	6	11
Sep-18	3	2
Sep-19	0	0
Sep-20	0	0
Sep-21	1	0
Sep-22	0	0
Sep-23	0	0
Sep-24	13	10
Sep-25	0	0
Sep-26	2	1
Sep-27	1	0
Sep-28	0	0
Sep-29	0	0
Sep-30	0	0
Oct-01	0	0
Oct-02	0	0
Oct-03	0	0

Oct-04	0	0
Oct-05	0	0
Oct-06	1	3
Oct-07	5	4
Oct-08	0	0
Oct-09	4	7
Oct-10	2	2
Oct-11	0	0
Oct-12	0	0
Oct-13	10	7
Oct-14	0	0
Oct-15	0	0
Oct-16	0	0
Oct-17	0	0
Oct-18	0	0
Oct-19	0	0
Oct-20	0	0
Oct-21	0	0
Oct-22	0	0
Oct-23	0	0
Oct-24	0	0
Oct-25	Fence pulled	
Oct-26		
Oct-27		
Oct-28		
Oct-29		
Oct-30		
Oct-31		

Totals      216      164      380

% M/F      0.57      0.43

### Upper Bulkley River Coho Fence 2004 : Male vs Female Coho Timing

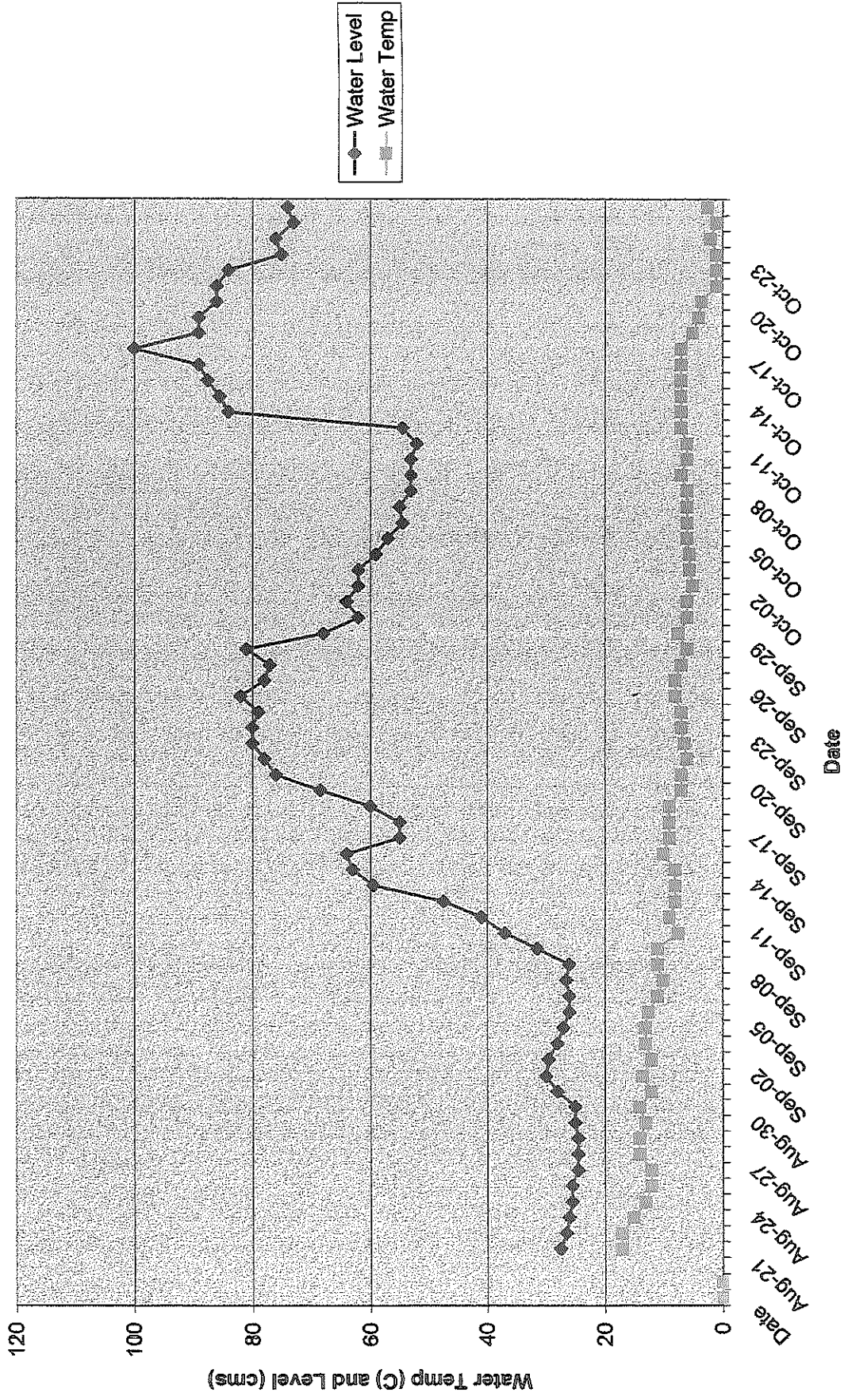


**Upper Bulkley River Coho Assessment Fence : 2004  
Water Level and Temperature Records**

<b>Date</b>	<b>Water Level (cms)</b>	<b>Water Temp Degrees (C)</b>
Aug-20	27.5	17
Aug-21	26.5	17
Aug-22	26	15
Aug-23	25.5	13
Aug-24	25.5	12
Aug-25	24.5	12
Aug-26	24.5	14
Aug-27	24.5	14
Aug-28	25	13
Aug-29	25	14
Aug-30	28	12
Aug-31	30	13.5
Sep-01	29.5	12
Sep-02	28	13
Sep-03	27	13
Sep-04	26	12.5
Sep-05	26	11
Sep-06	26.5	10
Sep-07	26	11
Sep-08	31.5	11
Sep-09	37	7.5
Sep-10	41	9
Sep-11	47.5	8
Sep-12	59.5	8
Sep-13	63	8
Sep-14	64	10
Sep-15	55	9
Sep-16	55	9
Sep-17	60	9
Sep-18	68.5	7
Sep-19	76	7
Sep-20	78	6
Sep-21	80	6.5
Sep-22	80	7
Sep-23	79	7
Sep-24	82	8
Sep-25	78	8
Sep-26	77	7
Sep-27	81	6
Sep-28	68	7.5
Sep-29	62	6
Sep-30	64	6

<b>Date</b>	<b>Water Level (cms)</b>	<b>Water Temp Degrees (C)</b>
Oct-01	62	5
Oct-02	62	5.5
Oct-03	59	5.5
Oct-04	57	6
Oct-05	54.5	6
Oct-06	55	6
Oct-07	53	6
Oct-08	53	7
Oct-09	53	6
Oct-10	52	6
Oct-11	54.5	7
Oct-12	84	7
Oct-13	85.5	7
Oct-14	87.5	7
Oct-15	89	7
Oct-16	100	7
Oct-17	89	5
Oct-18	89	4
Oct-19	86	3.5
Oct-20	86	1
Oct-21	84	1
Oct-22	75	1
Oct-23	76	2
Oct-24	73	1
Oct-25	74	2.5

Upper Bulkley River Fence 2004 : Water Temp (C) and Level(cms)



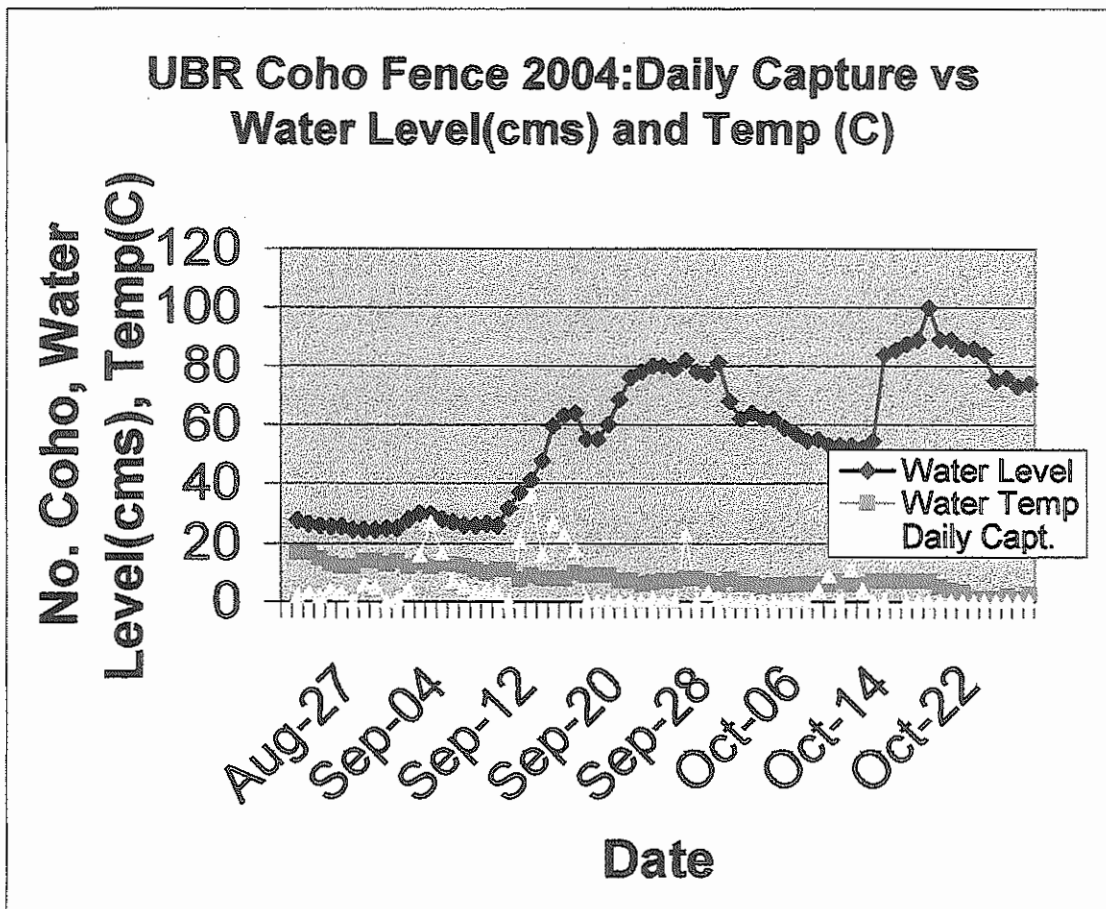
**UPPER BULKLEY RIVER COHO FENCE : 2004**

**Date      (cms)      Degrees (C)  
Water Level    Water Temp    Daily Capt.**

Aug-20	27.5	17	2
Aug-21	26.5	17	3
Aug-22	26	15	2
Aug-23	25.5	13	4
Aug-24	25.5	12	3
Aug-25	24.5	12	0
Aug-26	24.5	14	6
Aug-27	24.5	14	5
Aug-28	25	13	0
Aug-29	25	14	1
Aug-30	28	12	4
Aug-31	30	13.5	16
Sep-01	29.5	12	27
Sep-02	28	13	17
Sep-03	27	13	7
Sep-04	26	12.5	5
Sep-05	26	11	3
Sep-06	26.5	10	4
Sep-07	26	11	3
Sep-08	31.5	11	0
Sep-09	37	7.5	21
Sep-10	41	9	36
Sep-11	47.5	8	16
Sep-12	59.5	8	27
Sep-13	63	8	23
Sep-14	64	10	18
Sep-15	55	9	0
Sep-16	55	9	0
Sep-17	60	9	0
Sep-18	68.5	7	0
Sep-19	76	7	0
Sep-20	78	6	0
Sep-21	80	6.5	1
Sep-22	80	7	0
Sep-23	79	7	0
Sep-24	82	8	23
Sep-25	78	8	0
Sep-26	77	7	3
Sep-27	81	6	1
Sep-28	68	7.5	0
Sep-29	62	6	0
Sep-30	64	6	0
Oct-01	62	5	0
Oct-02	62	5.5	0
Oct-03	59	5.5	0
Oct-04	57	6	0



Oct-05	54.5	6	0
Oct-06	55	6	4
Oct-07	53	6	9
Oct-08	53	7	0
Oct-09	53	6	11
Oct-10	52	6	4
Oct-11	54.5	7	0
Oct-12	84	7	0
Oct-13	85.5	7	17
Oct-14	87.5	7	0
Oct-15	89	7	0
Oct-16	100	7	0
Oct-17	89	5	0
Oct-18	89	4	0
Oct-19	86	3.5	0
Oct-20	86	1	0
Oct-21	84	1	0
Oct-22	75	1	0
Oct-23	76	2	0
Oct-24	73	1	0
Oct-25	74	2.5	0



UBR Fence : Summary of Daily Coho Capture : 2004

Date      Daily Capt   Cum Cap   Cum Prop

Aug-20	2	2	0.005
Aug-21	3	5	0.013
Aug-22	2	7	0.018
Aug-23	4	11	0.029
Aug-24	3	14	0.037
Aug-25	0	14	0.037
Aug-26	6	20	0.053
Aug-27	5	25	0.066
Aug-28	0	25	0.066
Aug-29	1	26	0.068
Aug-30	4	30	0.079
Aug-31	16	46	0.121
Sep-01	27	73	0.192
Sep-02	17	90	0.237
Sep-03	7	97	0.255
Sep-04	5	102	0.268
Sep-05	3	105	0.276
Sep-06	4	109	0.287
Sep-07	3	112	0.295
Sep-08	0	112	0.295
Sep-09	21	133	0.350
Sep-10	36	169	0.445
Sep-11	16	185	0.487
Sep-12	27	212	0.558
Sep-13	23	235	0.618
Sep-14	18	253	0.666
Sep-15	26	279	0.734
Sep-16	6	285	0.750
Sep-17	17	302	0.795
Sep-18	5	307	0.808
Sep-19	0	307	0.808
Sep-20	0	307	0.808
Sep-21	1	308	0.811
Sep-22	0	308	0.811
Sep-23	0	308	0.811
Sep-24	23	331	0.871
Sep-25	0	331	0.871
Sep-26	3	334	0.879
Sep-27	1	335	0.882
Sep-28	0	335	0.882
Sep-29	0	335	0.882
Sep-30	0	335	0.882
Oct-01	0	335	0.882
Oct-02	0	335	0.882
Oct-03	0	335	0.882
Oct-04	0	335	0.882
Oct-05	0	335	0.882

Date      Daily Capt   Cum Cap   Cum Prop

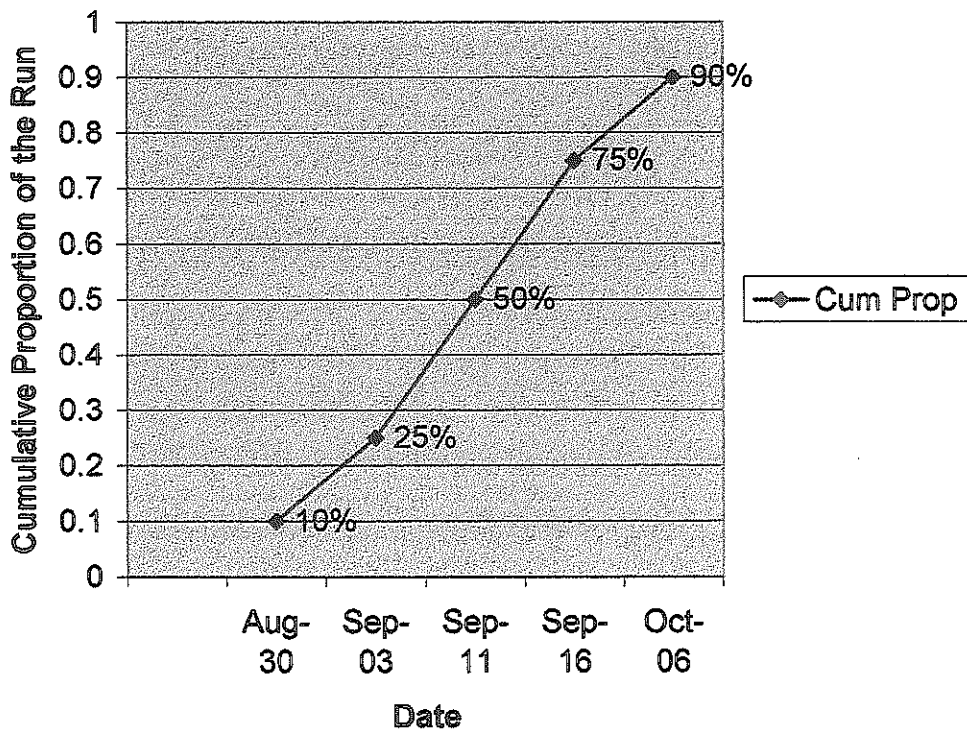
Oct-06	4	339	0.892
Oct-07	9	348	0.916
Oct-08	0	348	0.916
Oct-09	11	359	0.945
Oct-10	4	363	0.955
Oct-11	0	363	0.955
Oct-12	0	363	0.955
Oct-13	17	380	1.000
Oct-14	0	380	1.000
Oct-15	0	380	1.000
Oct-16	0	380	1.000
Oct-17	0	380	1.000
Oct-18	0	380	1.000
Oct-19	0	380	1.000
Oct-20	0	380	1.000
Oct-21	0	380	1.000
Oct-22	0	380	1.000
Oct-23	0	380	1.000
Oct-24	0	380	1.000
Oct-25	0	380	1.000

**Cumulative Run Timing Summary : 2004**

**Date      Cum Prop**

Aug-30	10%
Sep-03	25%
Sep-11	50%
Sep-16	75%
Oct-06	90%

**Upper Bulkley River Coho Fence 2004 :  
Cumulative Proportion of Run Timing**



**Upper Bulkley River Coho Fence : Cumulative Run Timing Comparison 2002 - 2004**

**Return Yr**   **10%**        **25%**        **50%**        **75%**        **90%**

<b>2002</b>	Sep-15	Sep-18	Sep-20	Sep-24	Sep-30
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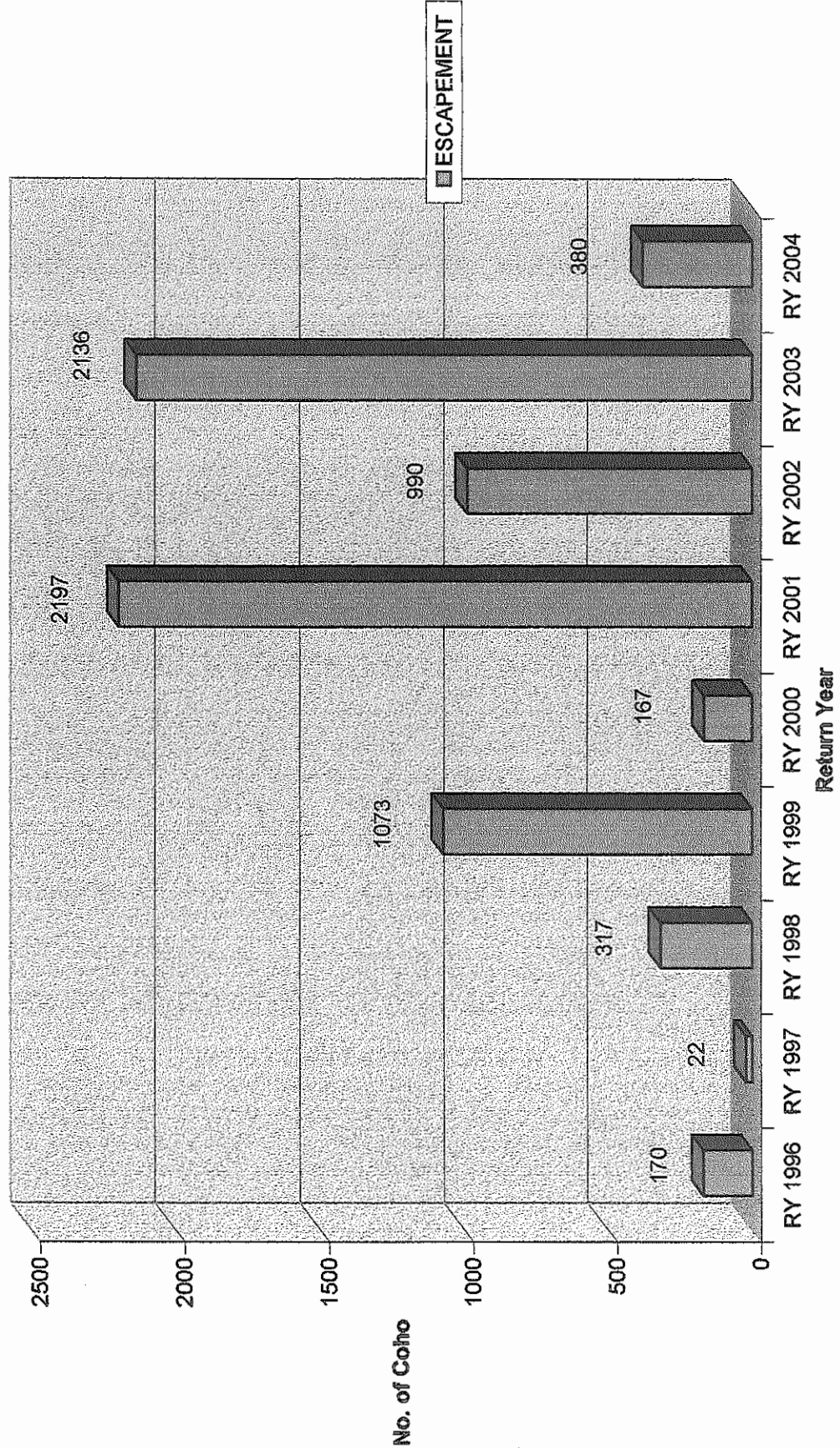
<b>2003</b>	Sep-06	Sep-11	Sep-21	Sep-27	Oct-06
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<b>2004</b>	Aug-30	Sep-03	Sep-11	Sep-16	Oct-06
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**UPPER BULKLEY RIVER COHO ESCAPEMENT SUMMARY : 1996 - 2004**

<b>RETURN YR</b>	<b>ESCAPEMENT</b>
RY 1996	170
RY 1997	22
RY 1998	317
RY 1999	1073
RY 2000	167
RY 2001	2197
RY 2002	990
RY 2003	2136
RY 2004	380

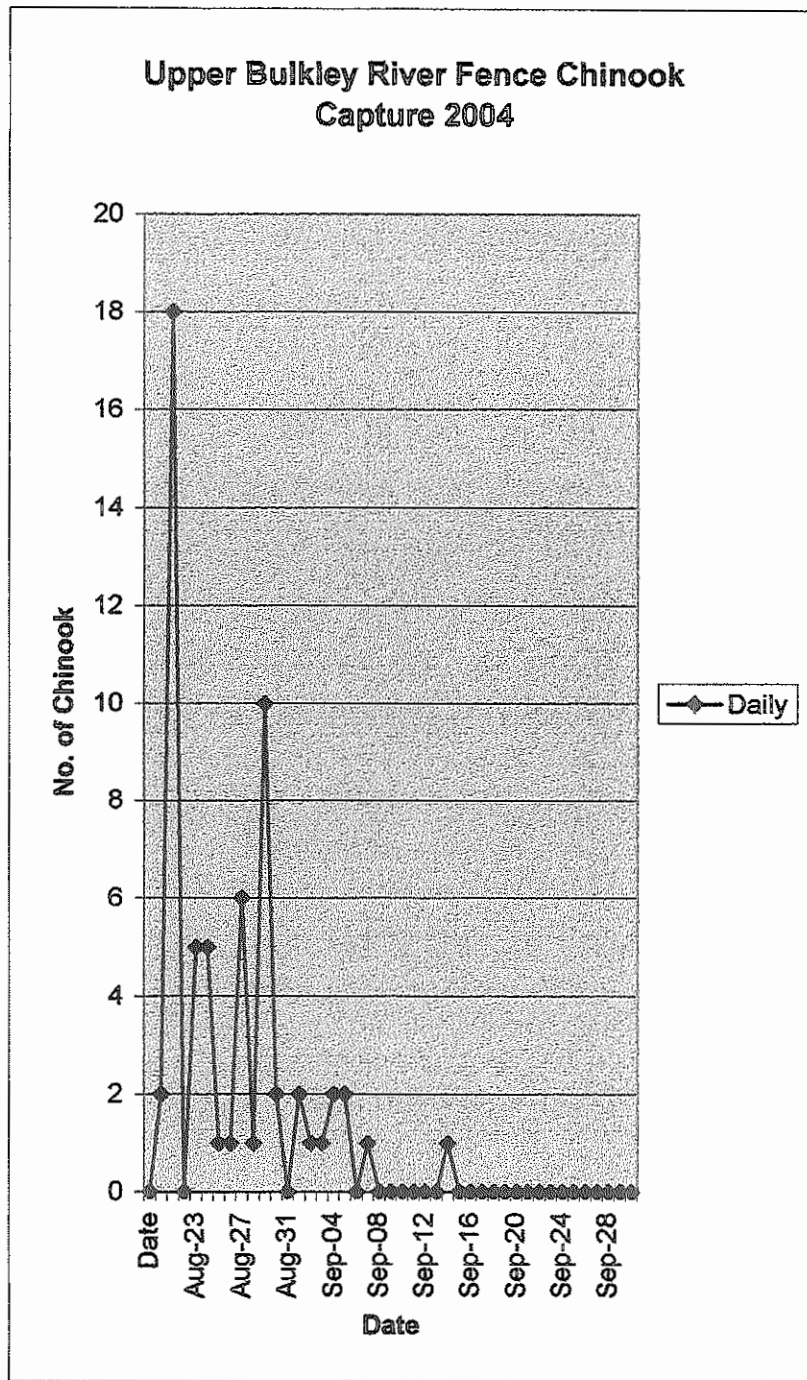
Figure 2 :Upper Bulkley River Coho Escapement Summary : 1996 to 2004



**Upper Bulkley River Fence : 2004**  
**Daily Capture Records for Chinook**

<b>Date</b>	<b>Species</b>	<b>No. Ad Males</b>	<b>No. Ad Females</b>	<b>No. Ad Jacks</b>	<b>No. Unmark Males</b>	<b>No. Unmark Females</b>	<b>No. Unmar Jacks</b>	<b>Daily Total</b>
Aug-20	Chinook	0	0	0	1	0	1	2
Aug-21	Chinook	0	0	0	13	5	0	18
Aug-22	Chinook	0	0	0	0	0	0	0
Aug-23	Chinook	0	0	0	4	1	0	5
Aug-24	Chinook	0	0	0	3	2	0	5
Aug-25	Chinook	0	0	0	0	0	1	1
Aug-26	Chinook	0	0	0	1	0	0	1
Aug-27	Chinook	0	0	0	3	3	0	6
Aug-28	Chinook	0	0	0	1	0	0	1
Aug-29	Chinook	1	0	0	6	3	0	10
Aug-30	Chinook	0	0	0	2	0	0	2
Aug-31	Chinook	0	0	0	0	0	0	0
Sep-01	Chinook	0	0	0	1	1	0	2
Sep-02	Chinook	0	0	0	0	1	0	1
Sep-03	Chinook	0	0	0	1	0	0	1
Sep-04	Chinook	0	0	0	1	1	0	2
Sep-05	Chinook	0	0	0	2	0	0	2
Sep-06	Chinook	0	0	0	0	0	0	0
Sep-07	Chinook	0	0	0	1	0	0	1
Sep-08	Chinook	0	0	0	0	0	0	0
Sep-09	Chinook	0	0	0	0	0	0	0
Sep-10	Chinook	0	0	0	0	0	0	0
Sep-11	Chinook	0	0	0	0	0	0	0
Sep-12	Chinook	0	0	0	0	0	0	0
Sep-13	Chinook	0	0	0	0	0	0	0
Sep-14	Chinook	0	0	0	1	0	0	1
Sep-15	Chinook	0	0	0	0	0	0	0
Sep-16	Chinook	0	0	0	0	0	0	0
Sep-17	Chinook	0	0	0	0	0	0	0
Sep-18	Chinook	0	0	0	0	0	0	0
Sep-19	Chinook	0	0	0	0	0	0	0
Sep-20	Chinook	0	0	0	0	0	0	0
Sep-21	Chinook	0	0	0	0	0	0	0
Sep-22	Chinook	0	0	0	0	0	0	0
Sep-23	Chinook	0	0	0	0	0	0	0
Sep-24	Chinook	0	0	0	0	0	0	0
Sep-25	Chinook	0	0	0	0	0	0	0
Sep-26	Chinook	0	0	0	0	0	0	0
Sep-27	Chinook	0	0	0	0	0	0	0
Sep-28	Chinook	0	0	0	0	0	0	0
Sep-29	Chinook	0	0	0	0	0	0	0
Sep-30	Chinook	0	0	0	0	0	0	0
<b>Totals</b>		<b>1</b>	<b>0</b>	<b>0</b>	<b>41</b>	<b>17</b>	<b>2</b>	<b>61</b>

Date	Daily Total
Aug-20	2
Aug-21	18
Aug-22	0
Aug-23	5
Aug-24	5
Aug-25	1
Aug-26	1
Aug-27	6
Aug-28	1
Aug-29	10
Aug-30	2
Aug-31	0
Sep-01	2
Sep-02	1
Sep-03	1
Sep-04	2
Sep-05	2
Sep-06	0
Sep-07	1
Sep-08	0
Sep-09	0
Sep-10	0
Sep-11	0
Sep-12	0
Sep-13	0
Sep-14	1
Sep-15	0
Sep-16	0
Sep-17	0
Sep-18	0
Sep-19	0
Sep-20	0
Sep-21	0
Sep-22	0
Sep-23	0
Sep-24	0
Sep-25	0
Sep-26	0
Sep-27	0
Sep-28	0
Sep-29	0
Sep-30	0



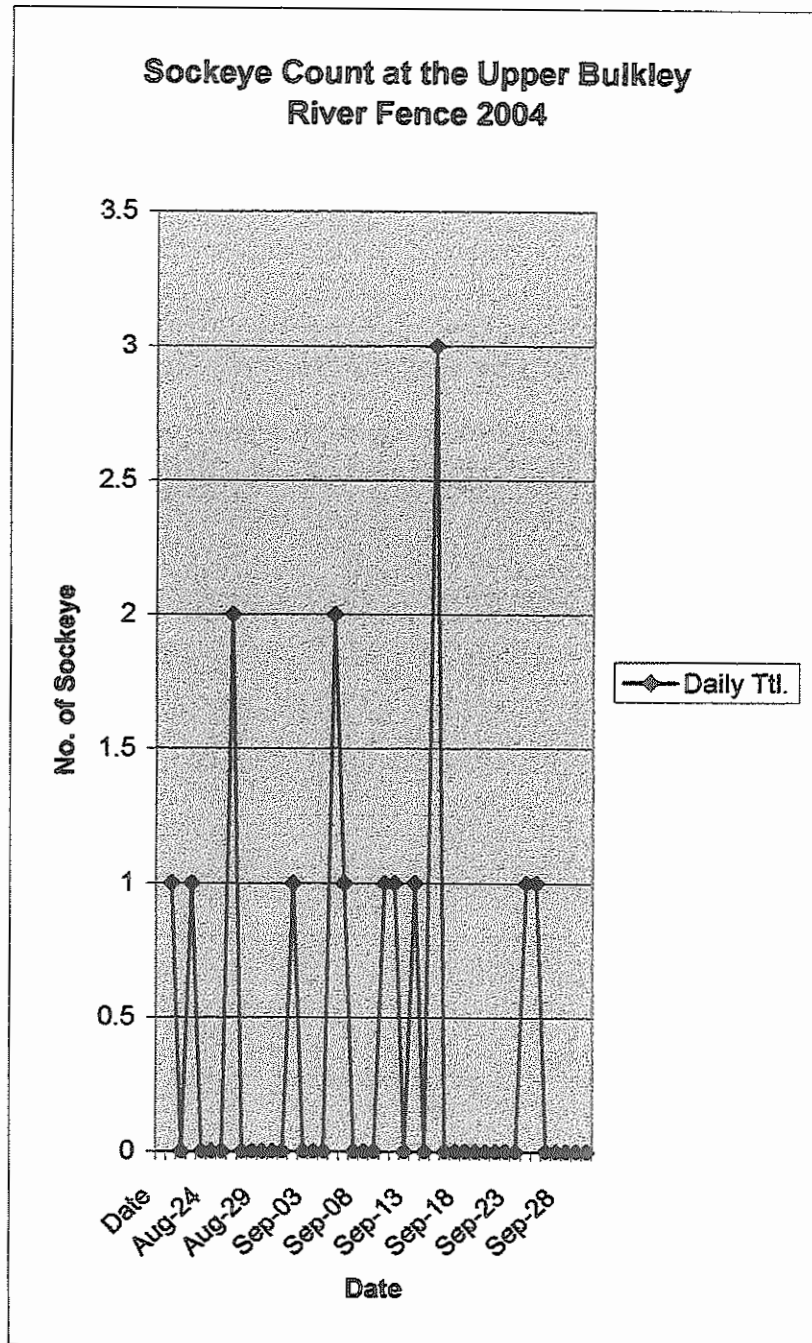


**Upper Bulkley River Fence : 2004  
Daily Capture Records for Sockeye**

Date	Species	Number Males	Number Females	Daily Total	Comments
Aug-20	Sockeye	1	0	1	DNA taken vial #1, no scales taken, no DFT
Aug-21	Sockeye	0	0	0	
Aug-22	Sockeye	1	0	1	DNA taken vial #2, no scales, no DFT
Aug-23	Sockeye	0	0	0	
Aug-24	Sockeye	0	0	0	
Aug-25	Sockeye	0	0	0	
Aug-26	Sockeye	1	1	2	DNA taken, Vials #3&4, Male = DFT 80583 MF
Aug-27	Sockeye	0	0	0	
Aug-28	Sockeye	0	0	0	
Aug-29	Sockeye	0	0	0	
Aug-30	Sockeye	0	0	0	
Aug-31	Sockeye	0	0	0	
Sep-01	Sockeye	1	0	1	DNA taken - no scales
Sep-02	Sockeye	0	0	0	
Sep-03	Sockeye	0	0	0	
Sep-04	Sockeye	0	0	0	
Sep-05	Sockeye	1	1	2	DNA Taken
Sep-06	Sockeye	0	1	1	DNA Taken
Sep-07	Sockeye	0	0	0	
Sep-08	Sockeye	0	0	0	
Sep-09	Sockeye	0	0	0	
Sep-10	Sockeye	1	0	1	
Sep-11	Sockeye	1	0	1	DNA Taken
Sep-12	Sockeye	0	0	0	
Sep-13	Sockeye	1	0	1	Orange DFT # 70356 MS DNA Taken
Sep-14	Sockeye	0	0	0	
Sep-15	Sockeye	2	1	3	DNA taken
Sep-16	Sockeye	0	0	0	
Sep-17	Sockeye	0	0	0	
Sep-18	Sockeye	0	0	0	
Sep-19	Sockeye	0	0	0	
Sep-20	Sockeye	0	0	0	
Sep-21	Sockeye	0	0	0	
Sep-22	Sockeye	0	0	0	
Sep-23	Sockeye	0	0	0	
Sep-24	Sockeye	1	0	1	DNA taken
Sep-25	Sockeye	0	1	1	DNA taken
Sep-26				0	
Sep-27				0	
Sep-28				0	
Sep-29				0	
Sep-30				0	
Totals		11	5	16	

**Sockeye at the Upper Bulkley River Fence 2004**  
**Daily Ttl.**

Date	
Aug-20	1
Aug-21	0
Aug-22	1
Aug-23	0
Aug-24	0
Aug-25	0
Aug-26	2
Aug-27	0
Aug-28	0
Aug-29	0
Aug-30	0
Aug-31	0
Sep-01	1
Sep-02	0
Sep-03	0
Sep-04	0
Sep-05	2
Sep-06	1
Sep-07	0
Sep-08	0
Sep-09	0
Sep-10	1
Sep-11	1
Sep-12	0
Sep-13	1
Sep-14	0
Sep-15	3
Sep-16	0
Sep-17	0
Sep-18	0
Sep-19	0
Sep-20	0
Sep-21	0
Sep-22	0
Sep-23	0
Sep-24	1
Sep-25	1
Sep-26	0
Sep-27	0
Sep-28	0
Sep-29	0
Sep-30	0



**UPPER BULKLEY RIVER FENCE 2004 : STEELHEAD CAPTURE**

<u>Date</u>	<u>No. Steelhead</u>			<u>Total</u>
	<u>Females</u>	<u>Males</u>	<u>Sex Unknown</u>	<u>Daily Cap</u>

Aug-20	0	0	0	0
Aug-21	0	0	0	0
Aug-22	0	0	0	0
Aug-23	0	0	0	0
Aug-24	0	0	0	0
Aug-25	0	0	0	0
Aug-26	0	0	0	0
Aug-27	0	0	0	0
Aug-28	0	0	0	0
Aug-29	0	0	0	0
Aug-30	0	0	0	0
Aug-31	0	0	0	0
Sep-01	0	0	0	0
Sep-02	0	0	0	0
Sep-03	0	0	0	0
Sep-04	0	0	0	0
Sep-05	0	0	0	0
Sep-06	0	0	0	0
Sep-07	0	0	0	0
Sep-08	0	0	0	0
Sep-09	0	0	0	0
Sep-10	0	0	0	0
Sep-11	0	0	0	0
Sep-12	2	0	2	4
Sep-13	0	0	1	1
Sep-14	0	0	5	5
Sep-15	5	3	0	8
Sep-16	0	0	6	6
Sep-17	1	1	0	2
Sep-18	1	0	0	1
Sep-19	2	3	0	5
Sep-20	0	0	0	0
Sep-21	0	0	0	0
Sep-22	0	0	0	0
Sep-23	2	2	1	5
Sep-24	2	3	0	5
Sep-25	4	1	0	5
Sep-26	3	3	0	6
Sep-27	0	0	0	0
Sep-28	1	0	0	1
Sep-29	0	0	0	0
Sep-30	1	0	0	1
Oct-01	0	0	0	0
Oct-02	0	1	0	1
Oct-03	0	2	0	2
Oct-04	2	0	0	2

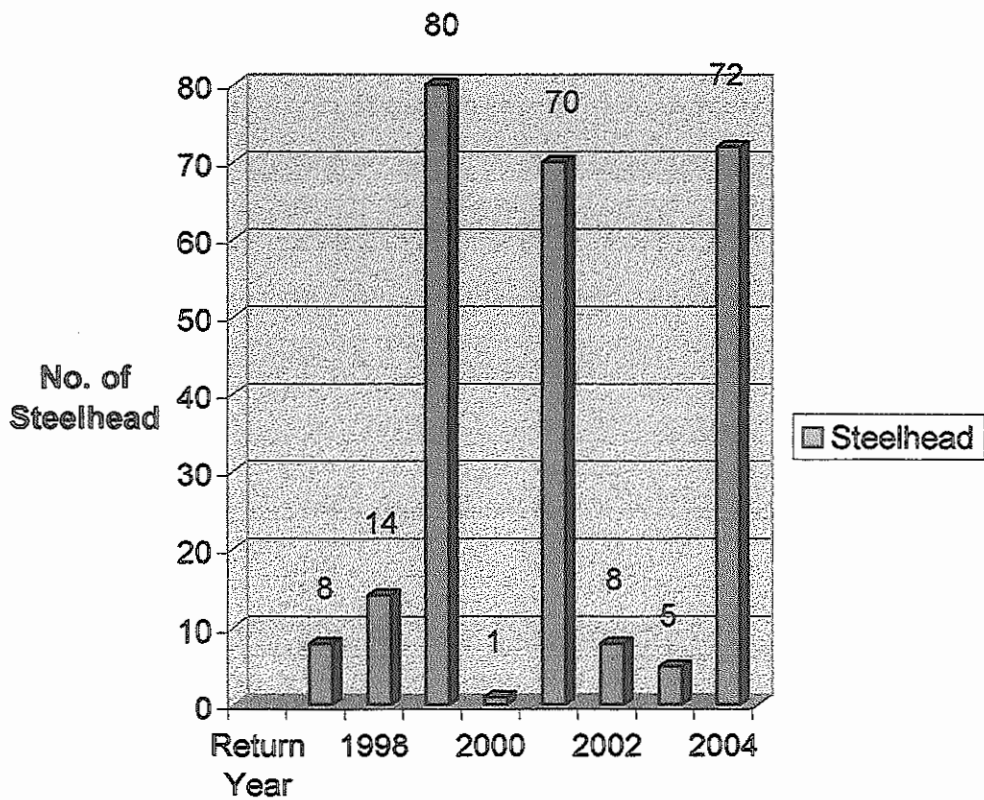
**UPPER BULKLEY RIVER FENCE : STEELHEAD CAPTURE SUMMARY 1997 - 2004**

**No.  
Steelhead**

**Return Year**

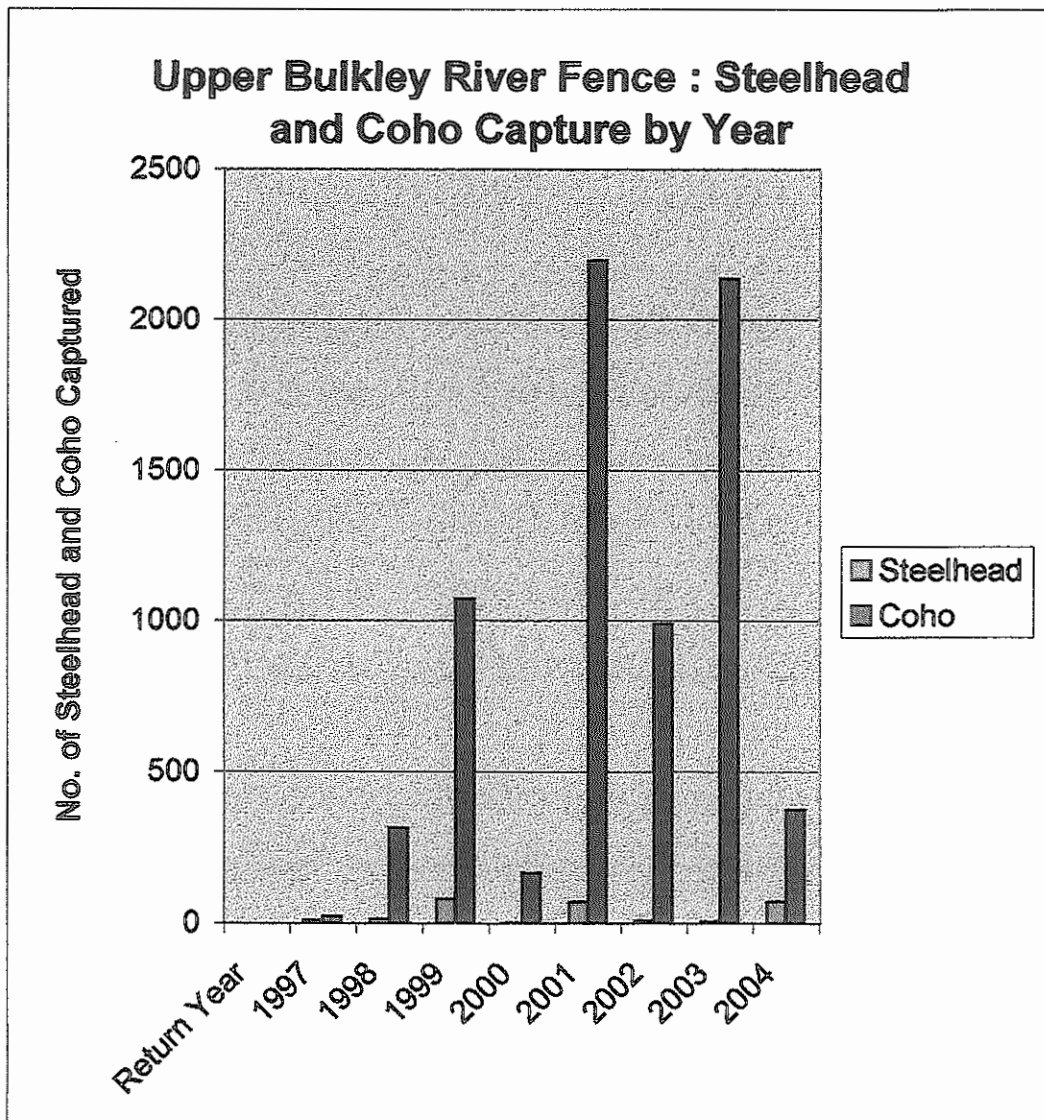
1997	8
1998	14
1999	80
2000	1
2001	70
2002	8
2003	5
2004	72

**Upper Bulkley River Fence Steelhead  
Counts : 1997-2004**



UPPER BULKLEY RIVER FENCE : STEELHEAD AND COHO COUNTS 1997 - 2004

Return Year	No. Steelhead	No. Coho
1997	8	22
1998	14	317
1999	80	1073
2000	1	167
2001	70	2197
2002	8	990
2003	5	2136
2004	72	380



UPPER BULKLEY RIVER - 2004 - 2004: Brenda Donas, SEP - COMMUNITY PROGRAMS, Stream Segment, 4D, Smithers, BULKLEY RIVER - UPPER, 2004/03/14, Coho

<b>Containers:</b>	45803, 45804, 45805, 45806, 45807
<b>Sample Type:</b>	ESCAPEMENT
<b>Gear:</b>	Fence
<b>Sample Dates:</b>	2004-08-31 to 2004-09-18

Age Distribution:	Species	European	Gilbert-Rich	Brood Yr.	Frequency	Percent
	Coho	11	32	2001	6	31.6%
	Coho	21	43	2000	13	68.4%
<b>Total:</b>					19	100.0%

Partial Ages:	Coho	M1	1M	1 Marine Annulus	4	100.0%
<b>Total:</b>					4	100.0%

No Ages:					0	0.0%
<b>Total:</b>					0	0.0%

Specimen Label	Species	Age Structure Type	Container Label	Container Address	Gilbert-Rich Age	European Age	Partial Age Code	Sample Start Date	Sample End Date	Site
1	S0001	Scalera	45803	1	43	21		31/08/2004	31/08/2004	BULKLEY RIVER - UPPER
2	S0002	Scalera	45803	2	32	11		31/09/2004	31/09/2004	BULKLEY RIVER - UPPER
3	S0003	Scalera	45803	3	1M	M1	RG	31/08/2004	31/08/2004	BULKLEY RIVER - UPPER
4	S0004	Scalera	45803	4	1M	M1	UF	31/08/2004	31/08/2004	BULKLEY RIVER - UPPER
5	S0005	Scalera	45803	5	43	21		31/08/2004	31/08/2004	BULKLEY RIVER - UPPER
6	S0006	Scalera	45804	1	32	11		01/09/2004	01/09/2004	BULKLEY RIVER - UPPER
7	S0007	Scalera	45804	2	43	21		01/09/2004	01/09/2004	BULKLEY RIVER - UPPER
8	S0008	Scalera	45804	3	32	11		01/09/2004	01/09/2004	BULKLEY RIVER - UPPER
9	S0009	Scalera	45804	4	43	21		01/09/2004	01/09/2004	BULKLEY RIVER - UPPER
10	S0010	Scalera	45804	5	32	11		01/09/2004	01/09/2004	BULKLEY RIVER - UPPER
11	S0011	Scalera	45805	1	43	21		09/09/2004	09/09/2004	BULKLEY RIVER - UPPER
12	S0012	Scalera	45805	2	1M	M1	RG	09/09/2004	09/09/2004	BULKLEY RIVER - UPPER
13	S0013	Scalera	45805	3	43	21		09/09/2004	09/09/2004	BULKLEY RIVER - UPPER
14	S0014	Scalera	45805	4	43	21		09/09/2004	09/09/2004	BULKLEY RIVER - UPPER
15	S0015	Scalera	45805	5	45	21		09/09/2004	09/09/2004	BULKLEY RIVER - UPPER
16	S0016	Scalera	45806	1	43	21		15/09/2004	15/09/2004	BULKLEY RIVER - UPPER
17	S0017	Scalera	45806	2	32	11		15/09/2004	15/09/2004	BULKLEY RIVER - UPPER
18	S0018	Scalera	45806	3	43	21		15/09/2004	15/09/2004	BULKLEY RIVER - UPPER
19	S0019	Scalera	45806	4	43	21		15/09/2004	15/09/2004	BULKLEY RIVER - UPPER
20	S0020	Scalera	45806	5	43	21		15/09/2004	15/09/2004	BULKLEY RIVER - UPPER
21	S0021	Scalera	45807	1	32	11		18/09/2004	18/09/2004	BULKLEY RIVER - UPPER
22	S0022	Scalera	45807	2	1M	M1	RG	18/09/2004	18/09/2004	BULKLEY RIVER - UPPER
23	S0023	Scalera	45807	3	43	21		18/09/2004	18/09/2004	BULKLEY RIVER - UPPER

# APPENDIX B

## Contents

UBR Fence 2004 : CWT Recoveries at the Fence

CWT Recoveries at Moricetown

Coho CWT Recovery Proportions at the UBR Fence and at Moricetown

Alaskan Commercial Catch CWT Recoveries : 2004

UBR Fence CWT Recovery Summary : 1998 to 2001 Brood Years

**UPPER BULKLEY RIVER FENCE : 2004**

**CWT HEAD RECOVERY RECORD SHEET**

<u>Date</u>	<u>Sex</u>	<u>Mark Type</u>	<u>Tag Code</u>
Aug-26	F	AD	18/43/21
Aug-30	M	AD	18/53/08
Aug-30	M	AD	18/53/08
Sep-01	M	AD	18/53/08
Sep-01	M	AD	18/53/08
Sep-02	M	AD	18/22/09
Sep-07	F	AD	18/53/08
Sep-09	M	AD	18/53/08
Sep-10	M	AD	18/53/08
Sep-11	M	AD	18/53/08
Sep-12	M	AD	18/22/08
Sep-13	M	ADRM	18/22/08
Sep-13	F	ADRM	18/53/08
Sep-13	F	AD	18/22/09
Sep-13	M	AD	18/53/08
Sep-14	M	ADRM	18/22/09
Sep-15	F	ADRM	NO DATA
Sep-15	M	AD	NO DATA
Sep-22	M	AD	18/53/08



**Coho CWT Recoveries at Moricetown : 2004**

<b>Date</b>	<b>Species</b>	<b>Site</b>	<b>E Tag #</b>	<b>CWT code</b>	<b>LAB SYMBOL</b>
Sept 06/04	coho	Moricetown	468065	18-35-28	
Sept 06/04	coho	Moricetown	468066	18-35-29	
Sept 06/04	coho	Moricetown	2101	18-35-28	
Sept 06/04	coho	Moricetown	2102	18-35-29	
Sept 08/04	coho	Moricetown	2103	18-35-28	
Aug 13/04	coho	Moricetown	2104	18-35-28	
Aug 23/04	coho	Moricetown	2105	18-35-27	
Sept 03/04	coho	Moricetown	2106	18-35-29	1
Sept 08/04	coho	Moricetown	2107	18-35-27	
Sept 10/04	coho	Moricetown	2108	18-35-28	1
Sept 08/04	coho	Moricetown	2109	18-35-28	
Aug 30/04	coho	Moricetown	2110	18-43-20	1
Sept 8/04	coho	Moricetown	2111	18-48-28	
Sept 03/04	coho	Moricetown	2112	18-53-08	1
Aug 30/04	coho	Moricetown	2113	18-35-27	
Sept 08/04	coho	Moricetown	2114	18-35-29	1
Sept 08/04	coho	Moricetown	2115	18-35-29	1
Sept 03/04	coho	Moricetown	2116	18-35-27	
Sept 08/04	coho	Moricetown	2117	18-35-28	
Sept 08/04	coho	Moricetown	2118	18-35-28	
Sept 08/04	coho	Moricetown	2119	18-35-29	
Sept 08/04	coho	Moricetown	2120	18-35-29	
Sept 02/04	coho	Moricetown	2121	18-35-28	1
Sept 02/04	coho	Moricetown	2122	18-35-27	
Aug 19/04	coho	Moricetown	2123	18-35-28	
Aug 10/04	coho	Moricetown	2124	18-22-08	1
Aug 10/04	coho	Moricetown	2125	18-35-27	1
Aug 10/04	coho	Moricetown	2126	18-35-28	1
Aug 10/04	coho	Moricetown	2127	18-35-28	1
Aug 10/04	coho	Moricetown	2128	18-53-08	1
Aug 10/04	coho	Moricetown	2129	18-35-27	
Aug 10/04	coho	Moricetown	2130	18-53-08	1
Aug 19/04	coho	Moricetown	2131	18-35-29	1
Aug 23/04	coho	Moricetown	2132	18-35-27	1
Aug 10/04	coho	Moricetown	2133	18-22-08	1
Sept 03/04	coho	Moricetown	2134	18-35-27	1
Sept 02/04	coho	Moricetown	2135	18-35-28	1
Sept 02/04	coho	Moricetown	2136	18-35-27	1
Sept 03/04	coho	Moricetown	2137	18-53-08	
Sept 02/04	coho	Moricetown	2138	18-22-09	
Sept 10/04	coho	Moricetown	2139	18-35-27	1
Sept 02/04	coho	Moricetown	2140	18-35-27	1
Sept 08/04	coho	Moricetown	2141	18-35-27	
Sept 08/04	coho	Moricetown	2142	18-35-28	1
Sept 08/04	coho	Moricetown	2143	18-48-29	1
Sept 08/04	coho	Moricetown	2144	18-35-28	
Sept 08/04	coho	Moricetown	2145	18-35-29	

**Coho CWT Recoveries at Moricetown : 2004**

<b>Date</b>	<b>Species</b>	<b>Site</b>	<b>E Tag #</b>	<b>CWT code</b>	<b>LAB SYMBOL</b>
Aug 23/04	coho	Moricetown	2146	18-35-29	
Aug 21/04	coho	Moricetown	2147	18-35-29	
Aug 24/04	coho	Moricetown	2148	18-35-29	1
Aug 05/04	coho	Moricetown	2149	No-pin	
Aug 23/04	coho	Moricetown	2150	No-pin	
Aug 23/04	coho	Moricetown	2151	18-35-28	
Aug 24/04	coho	Moricetown	2152	18-35-28	1
Aug 12/04	coho	Moricetown	2153	18-35-29	
Aug 20/04	coho	Moricetown	2154	18-35-28	
Aug 16/04	coho	Moricetown	2155	18-35-29	1
Aug 30/04	coho	Moricetown	2156	18-35-29	1
Aug 06/04	coho	Moricetown	2157	18-35-27	
Aug 17/04	coho	Moricetown	2158	18-35-29	
Aug 23/04	coho	Moricetown	2159	18-53-08	1
Aug 23/04	coho	Moricetown	2160	18-43-19	1
Aug 12/04	coho	Moricetown	2161	No-pin	MG
Aug 16/04	coho	Moricetown	2162	18-35-27	1
Aug 23/04	coho	Moricetown	2163	18-35-27	
Aug 11/04	coho	Moricetown	2164	02-05-09	
Aug 13/04	coho	Moricetown	2165	18-22-09	
Aug 16/04	coho	Moricetown	2166	18-22-09	
Aug 17/04	coho	Moricetown	2167	18-35-28	
Aug 24/04	coho	Moricetown	2168	18-35-29	
Aug 27/04	coho	Moricetown	2169	18-35-29	
Sept 01/04	coho	Moricetown	2170	18-35-29	1
Aug 25/04	coho	Moricetown	2171	18-35-28	1
Aug 18/04	coho	Moricetown	2172	18-22-09	4
Aug 18/04	coho	Moricetown	2173	18-53-08	1
Sept 01/04	coho	Moricetown	2174	18-53-08	
Aug 27/04	coho	Moricetown	2175	18-35-28	
Sept 01/04	coho	Moricetown	2176	18-35-27	
Aug 27/04	coho	Moricetown	2177	18-22-09	
Aug 27/04	coho	Moricetown	2178	18-35-27	
Sept 01/04	coho	Moricetown	2179	18-35-28	1
Sept 01/04	coho	Moricetown	2180	18-35-28	1
Sept 01/04	coho	Moricetown	2181	18-35-28	1
Sept 01/04	coho	Moricetown	2182	18-53-08	
Aug 09/04	coho	Moricetown	2183	18-35-27	1
Aug 27/04	coho	Moricetown	2184	18-22-09	
Aug 24/04	coho	Moricetown	2185	18-35-28	
Aug 26/04	coho	Moricetown	2186	18-35-29	1
Aug 25/04	coho	Moricetown	2187	18-53-08	1
Aug 31/04	coho	Moricetown	2188	18-35-28	
Sept 01/04	coho	Moricetown	2189	18-35-29	1
Sept 01/04	coho	Moricetown	2190	18-35-28	1
Sept 01/04	coho	Moricetown	2191	18-35-28	1
Aug 18/04	coho	Moricetown	2192	18-43-19	

**Coho CWT Recoveries at Moricetown : 2004**

<u>Date</u>	<u>Species</u>	<u>Site</u>	<u>E Tag #</u>	<u>CWT code</u>	<u>LAB SYMBOL</u>
Aug 13/04	coho	Moricetown	2193	18-35-28	
Aug 26/04	coho	Moricetown	2194	18-35-27	
Aug 31/04	coho	Moricetown	2195	18-35-27	
Aug 25/04	coho	Moricetown	2196	18-35-27	1
Aug 18/04	coho	Moricetown	2197	No-pin	MG
Aug 06/04	coho	Moricetown	2198	18-35-28	1
Aug 31/04	coho	Moricetown	2199	18-35-27	
Aug 27/04	coho	Moricetown	2200	18-53-08	

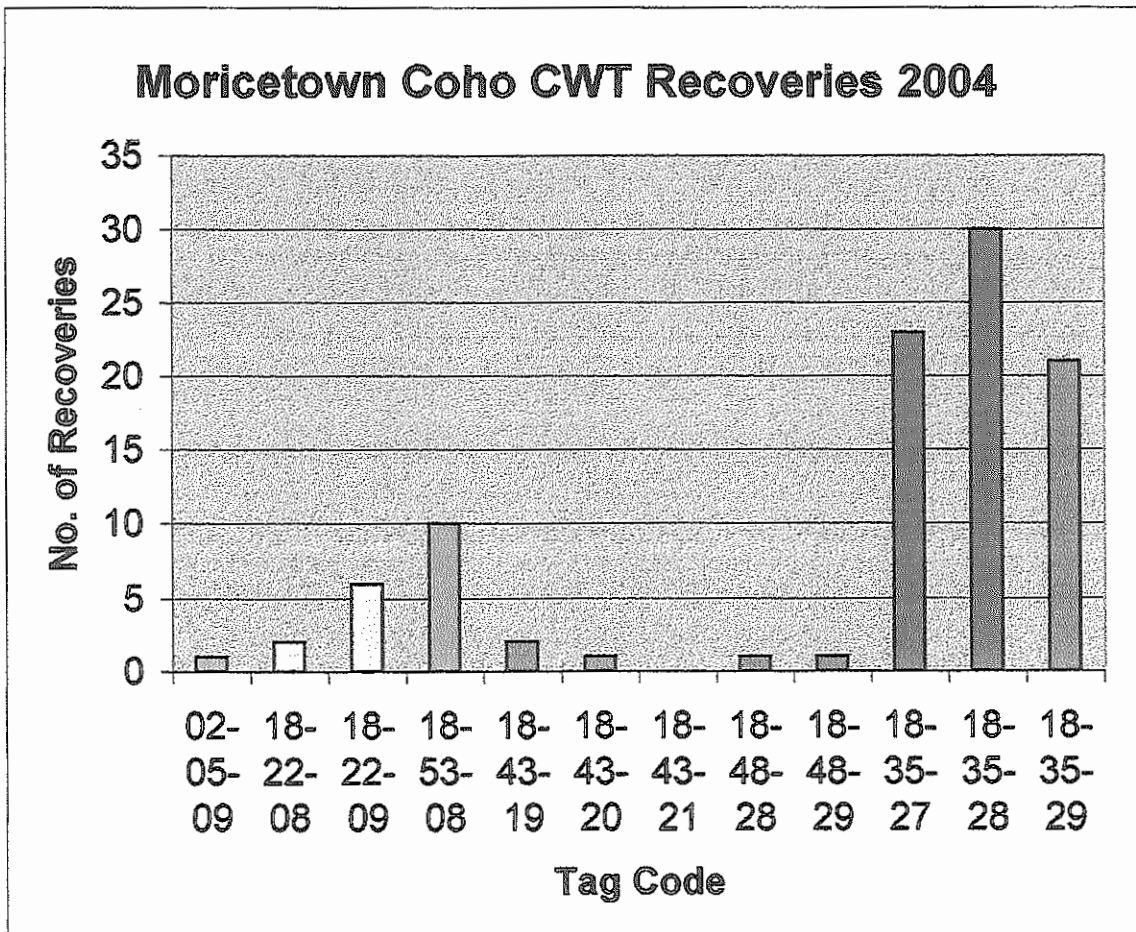
Moricetown Coho CWT Recoveries and Proportions of CWT's at Moricetown and UBR Fence

Stock	Brood Year	Stage at Release	Tag Code	Number of Recoveries	Mark Type	Total Prop'ns by Code	UBR Prop at Mo by Code	UBR Prop at Fe by Code
UBR	2001	fry	02-05-09	1	Ad	0.010	0.042	0
UBR	2001	smolt	18-22-08	2	ADRM	0.020	0.083	0.118
UBR	2001	smolt	18-22-09	6	ADRM	0.061	0.250	0.176
UBR	2001	fry	18-53-08	10	Ad	0.102	0.417	0.647
UBR	2000	fry	18-43-19	2	Ad	0.020	0.083	0
UBR	2000	fry	18-43-20	1	Ad	0.010	0.042	0
UBR	2000	fry	18-43-21	0	Ad	0.000	0.000	0.059
UBR	2000	smolt	18-48-28	1	Ad	0.010	0.042	0
UBR	2000	smolt	18-48-29	1	Ad	0.010	0.042	0
Toboggan	2001	smolt	18-35-27	23	Ad	0.235		
Toboggan	2001	smolt	18-35-28	30	Ad	0.306		
Toboggan	2001	smolt	18-35-29	21	Ad	0.214		
			No-pin	4	Unknown			

102

74 TC heads  
24 UBR heads

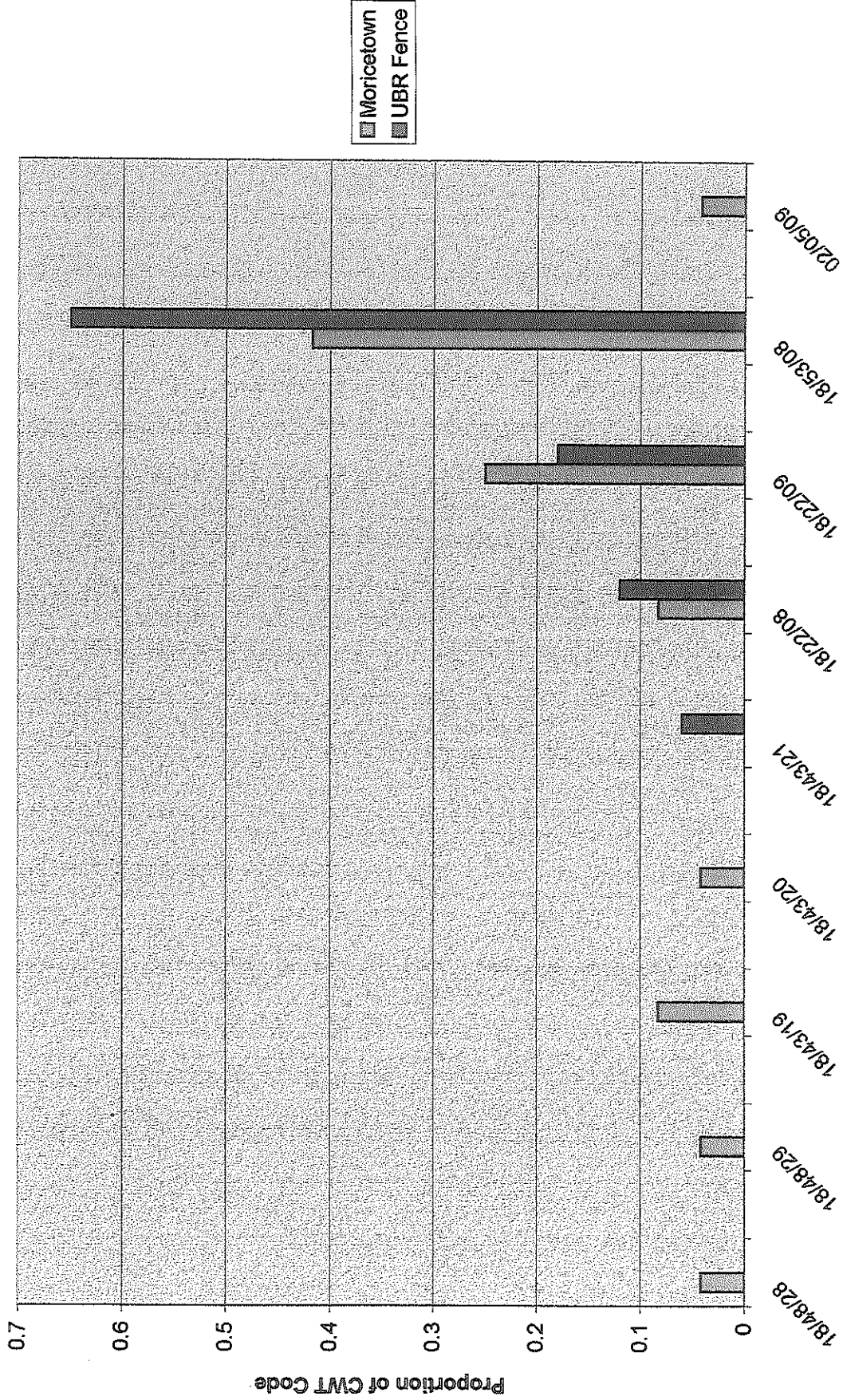
No. Tags 98  
UBR Tags 24



UPPER BULKLEY RIVER COHO : 2004 CWT RETURNS

Tag Code	Prop'n at Moricetown		Prop'n at UBR Fence		Stage at Release	Brood Year
18/48/28	0.042	0			smolt	2000
18/48/29	0.042	0			smolt	2000
18/43/19	0.083	0			fry	2000
18/43/20	0.042	0			fry	2000
18/43/21	0	0.06			fry	2000
18/22/08	0.083	0.12			smolt	2001
18/22/09	0.25	0.18			smolt	2001
18/53/08	0.417	0.65			fry	2001
02/05/09	0.042	0			fry	2001

Coho CWT Recovery Proportions at UBR Fence and Moricetown : 2004



**Summary of Alaskan Commercial Catches for Upper Bulkley River Coho and TC Coho for the 2004 Return Year**

**Stock      Brood Yr      Rel Stage      Tag Code      Contribution**

UBR	2000	smolt	18/48/28	<b>4.43393</b>
UBR	2000	fry	18/43/19	8.61493
UBR	2000	fry	18/43/20	3.50488
UBR	2000	fry	18/43/21	8.66712
				<b>20.78693</b>
UBR	2001	smolt	18/22/08	8.44748
			18/22/09	2.60776
				<b>11.05524</b>
UBR	2001	fry	02/05/09	7.14996
			18/53/08	19.60729
				<b>26.75725</b>
TC	2001	smolt	18/35/27	71.20638
			18/35/28	96.49113
			18/35/29	36.62003
				<b>204.3175</b>

**Comparison of 2001 UBR and TC Releases**

UBR smolt Contribution 11.05524

TC smolt Contribution 204.3175

One UBR coho from smolt releases was caught per 18.5 TC coho from smolt releases.

UBR Fry(2001 brood) Contribution 26.75725

TC smolt Contribution 204.3175

One UBR coho from fry releases(2001 brood) was caught for each 7.6 TC coho smolts released.

**Note :** Distribution of Toboggan Creek and UBR Coho differs in the Alaskan fishery. Toboggan Creek coho are caught in the Drift net, purse seine, troll and sport fisheries and UBR coho are caught in the troll fishery only.















Upper Bulkley River Fence : All CWT Coho Recoveries from 1998 Brood to 2001 Brood

Brood Year	Tag Code	Stage at Release	Expanded No at Fence	Number Released	Est Survival to Escapement
1998	18/34/30	fry	No heads taken for CWT sampling		
	18/34/31	fry	No heads taken for CWT sampling		
Totals			950	80440	0.012

1998	18/36/29	smolt	No heads taken	12493	
	18/36/30	smolt	No heads taken	12399	
	18/36/31	smolt	No heads taken	11422	
Totals			539	36314	0.015

1999	18/30/18	fry	62	20233	0.003
	18/30/19	fry	56	20171	0.003
	18/30/20	fry	50	23533	0.002
	18/43/16	fry	14	5783	0.002
Totals			182	69720	0.003

1999	18/35/39	smolt	19	11173	0.002
	18/35/40	smolt	38	11076	0.003
	18/35/41	smolt	19	11101	0.002
Totals			76	33350	0.002

2000	18/43/19	fry	5	10087	0.000
	18/43/20	fry	8	10079	0.001
	18/43/21	fry	16	9805	0.002
Totals			29	29971	0.001

2000	18/48/28	smolt	25	14802	0.002
	18/48/29	smolt	12	14905	0.001
Totals			37	29707	0.001

Upper Bulkley River Fence : All CWT Coho Recoveries from 1988 Brood to 2001 Brood

<u>Brood Year</u>	<u>Tag Code</u>	<u>Stage at Release</u>	<u>Expanded No at Fence</u>	<u>Number Released</u>	<u>Est Survival to Escapement</u>
2001	18/53/08	fry	96		
	02/05/09	fry	0		
<b>Totals</b>					

2001	18/22/08	smolt	18		
	18/22/09	smolt	26		
<b>Totals</b>					

# APPENDIX C

## Contents

UBR Fence 2004 : Dorsal Fin Tag Recoveries at the Fence  
Summary of Dorsal Fin Tag Recoveries at the UBR Fence : 1998 - 2004



UPPER BULKLEY RIVER FENCE : 2004

COHO DORSAL FIN TAG RECOVERIES

Date	Sex	Mark Type Ad, Rmax, Wild	DFT Color	DFT Number
Aug-20	Male	Unmark	Blue	30216 MF
Aug-22	Male	Unmark	Blue	30242 MF
Aug-24	Female	Unmark	Blue	30195 MF
Aug-27	Male	Unmark	Blue	30688 MF
Aug-27	Male	Unmark	Green	40324 MS
Aug-31	Male	Ad	Blue	30553 MF
Sep-01	Female	Unmark	Blue	30995 MF
Sep-01	Female	Unmark	Blue	30615 MF
Sep-01	Female	AD	Blue	30750 MF
Sep-02	Male	Unmark	Blue	30625 MF
Sep-02	Female	Unmark	Blue	30329 MF
Sep-03	Male	Unmark	Blue	30409 MF
Sep-03	Female	Unmark	Blue	30409 MF
Sep-04	Male	Unmark	Green	40393 MF
Sep-04	Male	Unmark	Blue	30774 MF
Sep-10	Male	Unmark	Green	40471 MS
Sep-11	Male	Unmark	Blue	30678 MF
Sep-12	Female	Unmark	Blue	31232 MF
Sep-12	Male	Unmark	Green	40508 MS
Sep-12	Male	Ad	Blue	30227 MF
Sep-12	Male	Unmark	Green	40770 MS
Sep-12	Female	Unmark	Green	40688 MS
Sep-13	Male	Unmark	Blue	31408 MF
Sep-13	Male	ADRM	Blue	30828 MF
Sep-14	Male	Unmark	Green	40818 MS
Sep-14	Male	Unmark	Blue	31258 MF
Sep-15	Male	ADRM	Blue	31062 MF
Sep-15	Male	Unmark	Green	40895 MS
Sep-15	Male	Unmark	Green	41001 MS
Sep-15	Female	Unmark	Blue	30545 MF
Sep-17	Male	Unmark	Blue	31141 MF
Sep-17	Female	Unmark	Green	41231 MS
Sep-18	Male	Unmark	Blue	30388 MF
Sep-24	Unknown	Unknown	Green	Unknown

No further dorsal fin tags recovered i.e Sept 25 - Oct 25, 2004

UPPER BULKLEY RIVER FENCE : 2004

COHO DORSAL FIN TAG RECOVERIES

Date	Sex	Mark Type DFT		DFT Number
		Ad. Rmax.	Color	
Aug-24	Female	Unmark	Blue	30195 MF
Sep-01	Female	Unmark	Blue	30995 MF
Sep-01	Female	Unmark	Blue	30615 MF
Sep-01	Female	AD	Blue	30750 MF
Sep-02	Female	Unmark	Blue	30329 MF
Sep-03	Female	Unmark	Blue	30409 MF
Sep-12	Female	Unmark	Blue	31232 MF
Sep-12	Female	Unmark	Green	40688 MS
Sep-15	Female	Unmark	Blue	30545 MF
Sep-17	Female	Unmark	Green	41231 MS
Aug-20	Male	Unmark	Blue	30216 MF
Aug-22	Male	Unmark	Blue	30242 MF
Aug-27	Male	Unmark	Blue	30688 MF
Aug-27	Male	Unmark	Green	40324 MS
Aug-31	Male	Ad	Blue	30553 MF
Sep-02	Male	Unmark	Blue	30625 MF
Sep-03	Male	Unmark	Blue	30409 MF
Sep-04	Male	Unmark	Green	40393 MF
Sep-04	Male	Unmark	Blue	30774 MF
Sep-10	Male	Unmark	Green	40471 MS
Sep-11	Male	Unmark	Blue	30678 MF
Sep-12	Male	Unmark	Green	40508 MS
Sep-12	Male	Ad	Blue	30227 MF
Sep-12	Male	Unmark	Green	40770 MS
Sep-13	Male	Unmark	Blue	31408 MF
Sep-13	Male	ADRM	Blue	30828 MF
Sep-14	Male	Unmark	Green	40818 MS
Sep-14	Male	Unmark	Blue	31258 MF
Sep-15	Male	ADRM	Blue	31062 MF
Sep-15	Male	Unmark	Green	40895 MS
Sep-15	Male	Unmark	Green	41001 MS
Sep-17	Male	Unmark	Blue	31141 MF
Sep-18	Male	Unmark	Blue	30388 MF
Sep-24	Unknown	Unknown	Green	Unknown

**UPPER BULKLEY RIVER FENCE : 2004**

**COHO DORSAL FIN TAG RECOVERIES SORTED BY COLOR**

**UPPER BULKLEY RIVER FENCE : 2004**

<u>Date</u>	<u>Sex</u>	<u>Mark Type</u> <u>Ad, Rmax, Wild</u>	<u>DFT</u> <u>Color</u>	<u>DFT</u> <u>Number</u>
Aug-24	Female	Unmark	Blue	30195 MF
Aug-20	Male	Unmark	Blue	30216 MF
Sep-12	Male	Ad	Blue	30227 MF
Aug-22	Male	Unmark	Blue	30242 MF
Sep-02	Female	Unmark	Blue	30329 MF
Sep-18	Male	Unmark	Blue	30388 MF
Sep-03	Male	Unmark	Blue	30409 MF
Sep-03	Female	Unmark	Blue	30409 MF
Sep-15	Female	Unmark	Blue	30545 MF
Aug-31	Male	Ad	Blue	30553 MF
Sep-01	Female	Unmark	Blue	30615 MF
Sep-02	Male	Unmark	Blue	30625 MF
Sep-11	Male	Unmark	Blue	30678 MF
Aug-27	Male	Unmark	Blue	30688 MF
Sep-01	Female	AD	Blue	30750 MF
Sep-04	Male	Unmark	Blue	30774 MF
Sep-13	Male	ADRM	Blue	30828 MF
Sep-01	Female	Unmark	Blue	30995 MF
Sep-15	Male	ADRM	Blue	31062 MF
Sep-17	Male	Unmark	Blue	31141 MF
Sep-12	Female	Unmark	Blue	31232 MF
Sep-14	Male	Unmark	Blue	31258 MF
Sep-13	Male	Unmark	Blue	31408 MF
Aug-27	Male	Unmark	Green	40324 MS
Sep-04	Male	Unmark	Green	40393 MF
Sep-10	Male	Unmark	Green	40471 MS
Sep-12	Male	Unmark	Green	40508 MS
Sep-12	Female	Unmark	Green	40688 MS
Sep-12	Male	Unmark	Green	40770 MS
Sep-14	Male	Unmark	Green	40818 MS
Sep-15	Male	Unmark	Green	40895 MS
Sep-15	Male	Unmark	Green	41001 MS
Sep-17	Female	Unmark	Green	41231 MS
Sep-24	Unknown	Unknown	Green	Unknown

23 Blue DFT's	
11 green DFT's	
Total DFTs	34
Total Fence Count	380
Prop of DFTs	9%

**UPPER BULKLEY RIVER FENCE : 2004**

**SOCKEYE DORSAL FIN TAG RECOVERIES**

<b>Date</b>	<b>Sex</b>	<b>Mark Type</b>	<b>DFT</b>	<b>DFT</b>
		<b>Ad. Rmax, I</b>	<b>Color</b>	<b>Number</b>
Aug-26	Male	unmark	yellow	80583 MF
Sep-13	Male	unmark	orange	70356 MS

**Upper Bulkley River Coho Assessment Fence : 2004**

**Comments on Dorsal Fin Tag Recoveries**

**Date**      **Comments**

Sep-03      Unmarked chinook jack found dead on the fence with Blue DFT # 1067

**UPPER BULKLEY RIVER COHO FENCE**

**COHO DORSAL FIN TAG RECOVERY SUMMARY 1997 - 2004**

Prop DFT's

Return Yr	Prop DFT's	# Dorsal Fin Tags	Ttl Capture
1997	0.09	2	22
1998	0.10	32	317
1999	0.12	128	1066
2000	0.05	8	166
2001	0.16	341	2197
2002	0.23	223	990
2003	0.16	284	1799
2004	0.09	34	380

