

BLIND CREEK CHINOOK SALMON ENUMERATION WEIR, 2010

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ABSTRACT

A weir was operated in Blind Creek in 2010 to enumerate the Chinook salmon escapement and obtain information on stock characteristics. This has been an annual program funded by the Yukon River Panel, Restoration & Enhancement Fund since 2003. The weir was placed in the same general area as in previous years, approximately 1 km upstream of the confluence with the Pelly River. Operation of the weir began on July 19 and continued until August 19. The first fish passed through the weir on July 28. In total, 270 Chinook salmon were counted which was 54% of the previous five year average run size in Blind Creek. Fifty percent of the run had passed through the weir by August 11 and 90% by August 16. Chinook spawners were sampled randomly throughout the weir operation to obtain information on the age-sex-length structure of the run. A total of 185 Chinook salmon (69% of the run) was sampled of which 77 (41.6%) were female and 108 (58.4%) were male. Jacks (males with a fork length \leq 630 mm) comprised 12% of the males sampled. The mean fork length of females and males sampled was 854.7 mm and 765.0 mm, respectively. Complete age data was determined from 127 Chinook sampled. Of these, age 5 was the predominant age class at 53.5% followed by age 6 at 33.1%. Age 4 fish represented 8.7% and age 7 fish represented 4.7%. As in previous years, a salmon brochure containing information about the salmon resource and weir operations was produced for distribution to visitors of the Town of Faro Interpretive Centre. At least 75 people visited the weir over the course of operations this year.

INTRODUCTION

Blind Creek is one of the major Chinook salmon spawning tributaries of the Pelly River in the Upper Yukon River drainage. Chinook escapements in Blind Creek, determined through weir operations in 1995, 1997-1999 and annually since 2003¹, have provided a valuable index for total escapement to the Pelly River drainage. Based on escapements in 2003-2009, Blind Creek supports an average run size of 635 Chinook with annual returns ranging from 276 (2008) to 1,155 (2003).

In addition to determining escapements, data has been obtained on age, sex and length (ASL) of Chinook salmon live sampled at the weir since 2003. This data provides fisheries managers with information for constructing brood year tables that are used for making future run projections. Scientists can also use ASL data collected over a number of years to support recent investigations related to basin-wide trends, which may indicate declines such as reduced size and age.

The proximity of the weir operation to the Town of Faro has provided an opportunity for salmon viewing and increasing awareness of the salmon resource. The weir site is located approximately 10 km from the Town of Faro and is accessible to the public along a maintained mining road (Blind Creek Road). Since 2005, an average of 80 visitors including tourists as well as local people have stopped to view the weir operation annually and a great deal of interest has been shown in salmon and the enumeration project (Wilson 2006, 2007, 2008 and 2009).

This report provides a summary of the Blind Creek weir operations in 2010. This was the eighth consecutive year that weir operations have been funded by the Yukon River Panel Restoration & Enhancement Fund.

STUDY AREA

Blind Creek flows in a southwesterly direction from its headwaters in the Anvil Range into the Pelly River, approximately 10 km southeast of the Town of Faro (Figure 1). The creek and its tributaries drain an area of approximately 618 km². Major lake systems in the drainage basin include the Blind Lake and Swim Lake chains. A mining access road from the Town of Faro crosses the creek at two locations, approximately 2 km (lower bridge) and 3 km (upper bridge) upstream of its confluence with the Pelly River. The weir site is located approximately 1 km upstream of the creek mouth and 30 m downstream of the lower bridge crossing.

¹ Counts from weir operations in 1996 and 2000 were not reported and the weir was not operated in 2001 and 2002.

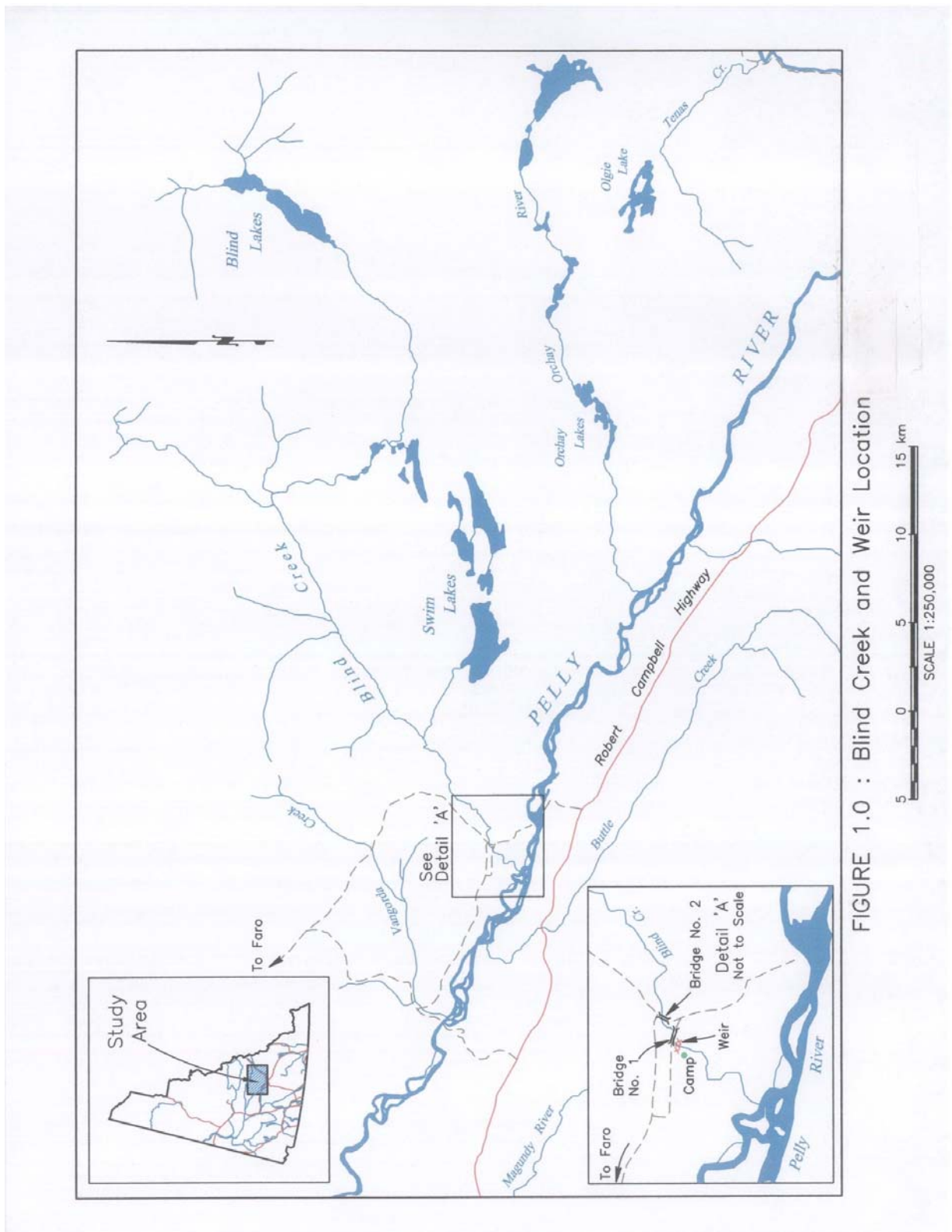


FIGURE 1.0 : Blind Creek and Weir Location

Figure 1. Blind Creek and Weir Location

OBJECTIVES

The specific objectives of the weir project were as follows:

- 1) Install and operate a weir in Blind Creek to enumerate the Chinook salmon escapement.
- 3) Conduct a sampling program to obtain ASL data from live Chinook salmon captured at the weir.
- 4) Promote salmon viewing and increase awareness of the weir project and the salmon resource.
- 5) Provide training and employment for community residents.

METHODS

Camp Set-up

Materials for the camp were transported from storage in Whitehorse and Faro by truck on July 16. As in previous years, the camp was set up on the west side of Blind Creek approximately 80 metres from the weir site and comprised of three wall tents: one to house a kitchen/eating area and two for sleeping quarters.

Weir Construction

The weir was installed on July 17 and fish tight by July 19. The weir was placed in the same general location as in previous operations, approximately 1 km upstream of the creek mouth and 30 m downstream of the first bridge crossing. Weir materials stored on site from previous operations were used in construction. Construction of the weir began with the placement of the counting chamber mid-stream and at the upstream apex of the fence. This chamber consisted of conduit panels connected together to form an enclosure measuring 2m (L) X 0.7 m (W) X 1.0 m (H). Two conduit panels, each 2 metres long, were used to connect the chamber to the fence and create a staging area for fish moving into the chamber (Figure 2). The fence was constructed of conduit panels and tripods placed downstream of the counting chamber in a 'V' configuration to direct fish moving close to the bank towards the staging area (Figure 3).

After the panels were in place, sand bags were placed along the bottom upstream side of the weir to prevent scouring of the creek substrate and undermining of the structure. A white 'flashboard' was secured to the bottom of the counting chamber to improve visibility of salmon passing through (Figure 4). A platform was placed alongside the counting chamber for enumerating and sampling fish and accessed from the bank via a wooden walkway. Black poly was secured over the staging area to prevent fish moving in from seeing weir attendants on the platform.



Figure 2. Staging area and sampling platform.



Figure 3. View of weir structure looking upstream.



Figure 4. Chinook salmon held in counting chamber for sampling.

Weir Operation

Personnel were on site 24 hours a day for the duration of the Chinook run. The weir was monitored daily from first light until dark. Daily and cumulative counts of fish passage were maintained throughout the run and relayed twice a week by phone to Trix Tanner, DFO, Whitehorse.

Enumeration was achieved by allowing fish access to the counting chamber. This was done by removing two or three pieces of conduit from both the downstream and upstream end of the counting chamber. After a few fish were counted through the chamber, a vertical gate secured to the upstream opening was released for quick closure and the next fish moving in held for sampling. After closing the downstream opening by releasing a similar vertical gate, all Chinook held in the chamber were immediately sampled to avoid causing stress on the fish. Only a small number of fish were held at any one time. Sampling events were attempted each day and, when possible, at various times throughout the day to obtain a representative sample of the daily run.

Chinook held for sampling were dip netted from the counting chamber and placed in a v-shaped trough filled with water (Figure 5). Sex and fork length (FL) was recorded as well as 50 paired FL and mid-eye fork (MEF) lengths. Scale samples (5 per fish) were taken for age determination only when it was possible to do so quickly and without stressing the fish.

The weir was checked regularly for scouring and areas of possible escape. Debris collecting on the weir was removed as required.



Figure 5. Sampling in progress.

Physical Measurements

Weir personnel recorded general weather and water conditions each morning. Air and water temperatures were taken using a hand-held thermometer. Water depth measurements were taken from a staff gauge located about 25 m downstream of the lower bridge along the right bank.

Yukon Department of Environment (Water Resources Branch) maintains a station for monitoring stream flows and water temperatures, located about 10 m upstream of the weir site. This data was not available at the time of writing this report.

RESULTS

Chinook Counts

A total of 270 Chinook salmon was counted through the weir between July 19 and August 19 (Table 1). The first Chinook passed through the counting chamber on July 28. Fifty percent of the run had passed through the weir by August 11 and 90% by August 16.

Biological Sampling

A total of 185 Chinook salmon (69% of the run) was live sampled for age-sex-length data (see sampling data, Appendix 2). Of these, 77 (42%) were female and 108 (58%) were male. Jacks (males with a fork length ≤ 630 mm) comprised 12% of the males sampled. The mean fork length of females and males sampled was 854.7 mm and 765.0 mm, respectively. Fork length frequencies of female and male Chinook sampled are presented in Figures 6 and 7. Full age data was determined from 127 of the Chinook sampled²(Table 2). Age 5 (1.3)³ fish were the predominant age class at 53.5% followed by age 6 (1.4, 2.3) at 33.1%. Age 4 (1.2) fish represented 8.7% and age 7 (1.5, 2.4) fish, 4.7%.

² Partial ages were determined for 52 fish sampled; no age could be determined from 6 of the sampled fish

³ European age format; e.g. 1.3 denotes 1 year freshwater residence and 3 year marine residence

Table 1. Blind Creek weir Chinook salmon counts, 2010

DATE	Daily Count	Cumulative	# Sampled	Comments
19-Jul	0	0	0	Weir fish tight
20-Jul	0	0	0	
21-Jul	0	0	0	
22-Jul	0	0	0	
23-Jul	0	0	0	
24-Jul	0	0	0	
25-Jul	0	0	0	
26-Jul	0	0	0	
27-Jul	0	0	0	1st fish observer below weir
28-Jul	1	1	1	
29-Jul	1	2	1	
30-Jul	1	3	1	
31-Jul	17	20	15	
1-Aug	0	20	0	
2-Aug	0	20	0	
3-Aug	0	20	0	
4-Aug	1	21	1	
5-Aug	33	54	17	
6-Aug	23	77	14	
7-Aug	19	96	15	
8-Aug	5	101	5	
9-Aug	9	110	9	
10-Aug	4	114	3	
11-Aug	27	141	20	
12-Aug	23	164	19	
13-Aug	19	183	12	
14-Aug	40	223	24	
15-Aug	14	237	4	
16-Aug	6	243	5	
17-Aug	12	255	10	
18-Aug	12	267	9	
19-Aug	3	270	0	Weir removed
TOTAL:	270		185	

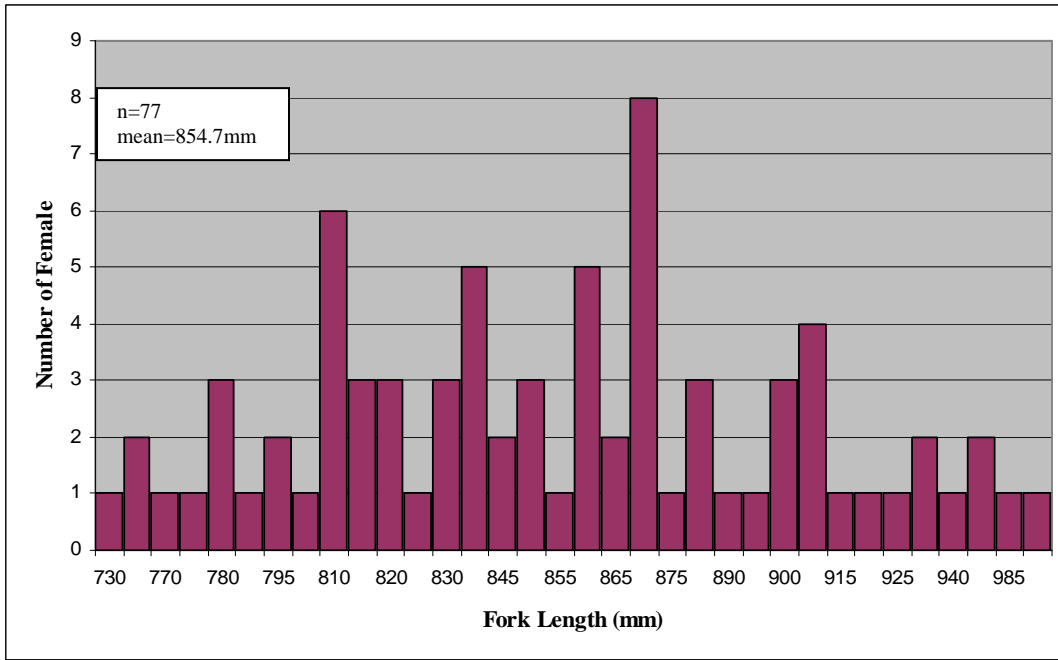


Figure 6. Length frequency of female Chinook sampled in 2010

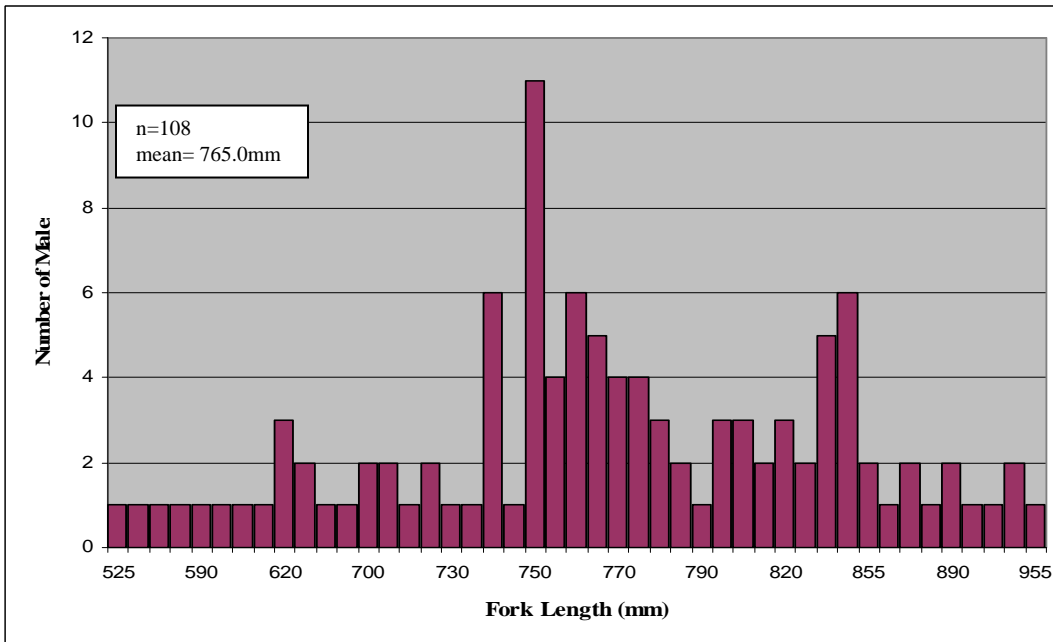


Figure 7. Length frequency of male Chinook sampled in 2010.

Table 2. Age distribution of Blind Creek Chinook salmon live sampled in 2010.

Age Distribution*:					
	European	Gilbert-Rich	Brood Yr.	Frequency	Percent
	1.2	4.2	2006	11	8.7%
	1.3	5.2	2005	68	53.5%
	1.4	6.2	2004	38	29.9%
	1.5	7.2	2003	5	3.9%
	2.3	6.3	2004	4	3.1%
	2.4	7.3	2003	1	0.8%
Total:				127	100.0%
Partial Ages:					
	1F	S2	1 Freshwater	2	3.8%
	M2	1M	2 Marine	5	9.6%
	M3	S3	3 Marine	28	53.8%
	M4	2M	4 Marine	14	26.9%
	M5	3M	5 Marine	3	5.8%
Total:				52	100.0%
No Ages:					
			No structure	2	33.3%
			Regenerate scale	3	50.0%
			Resorbed scale	1	16.7%
Total:				6	100.0%

* Scale age analysis was conducted under the aegis of DFO Whitehorse by the Pacific Biological Station, Fish Ageing Lab, Nanaimo, British Columbia.

Physical Measurements

Water levels in Blind Creek were low when the weir was installed and remained low for the duration of the weir project (Figure 8). Flow data was not available from Environment Canada, Water Resources department at the time of writing this report. Historical discharge data in July and August for the period 1992 to 2009 is presented in Appendix 3. Daily weather and water conditions in July and August are presented in Appendix 8.



Figure 8. Low water conditions as seen on August 11 at the weir site

DISCUSSION

The total escapement of 270 Chinook salmon to Blind Creek in 2010 was the lowest recorded since weir operations began in 1995⁴ and 54% of the previous five year (2005-2009) average of 500 fish. Lower than average escapements were also observed in other index areas in the upper Yukon River in 2010 (Mercer & Wilson 2011, Mercer 2011, DFO Whitehorse unpublished data 2010). Based on the Eagle sonar project downstream of the Canada/U.S. border, the overall estimate of the number of Chinook salmon entering the Canadian portion of the upper Yukon River in 2010 was below average and approximately 60% of the five year average (DFO Whitehorse, unpublished data 2010).

There were no major delays in the upstream movement of Chinook due to the weir this year. Fish generally moved up in small groups and tended to pass through the weir relatively quickly. In instances where larger groups arrived at the weir, a number of fish were allowed to pass through the counting chamber without being sampled to avoid delaying the run. This generally prevented pooling or holding of fish behind the weir for extended periods of time.

Frequent removal of beaver cuttings from the weir was necessary throughout the weir operation this year. Beavers were building a partial dam just upstream of the bridge above the weir site, but later abandoned that and attempted in earnest to dam the weir structure. This became a nightly event as they replaced the materials that were removed by weir staff each morning. Fortunately, there was no damage done to the weir and no holes that developed as a result of this activity.

The run timing in Blind Creek this year was similar to 2008, another poor escapement year. Although the date of arrival of the first fish at the weir in 2008 and 2010 (July 28) was similar

⁴ Weir counts in 1996 and 2000 were not reported and the weir was not operated in 2001 and 2002. Later installation dates in 1997, 1998 and 1999 may have resulted in early run fish being missed (Appendix 2).

to that observed in 2006, and 2009, the peak run timing was 5 to 6 days later. Similar to 2008⁵, the early portion of the run in 2010 was very weak with larger groups of fish not appearing until around August 5th (Appendix 4).

The proportional contribution of the Blind Creek Chinook stock to the Pelly River spawning population can be derived from genetic stock identification (GSI) information obtained from drift net sampling conducted at the Eagle sonar site downstream of the Canada/U.S. border. The spawning escapement in the upper Yukon River in 2010 was estimated to be 32,010 Chinook based on the Eagle sonar counts (DFO Whitehorse unpublished data 2010). The mean weighted proportional contribution of the Pelly River origin stocks based on GSI samples was 12.5% (SD 1.9). Using the 2010 Blind Creek count and the proportion of Pelly River origin stocks derived from the Eagle GSI sampling, the Blind Creek stock is estimated to represent 6.7% of the Pelly River Chinook population. This proportion is comparable to results from the 2009 Eagle drift net sampling program and the radio tag distribution determined from telemetry studies in 2003 and 2004 (Appendix 7).

The weir operation continued to be visited by a number of tourists as well as local people this year. Many of the visitors were directed to the weir by staff at the Town of Faro Interpretive Centre. As a result of the interest shown in salmon and the enumeration project, a salmon brochure containing information about the salmon resource and weir operation was produced in 2005 and has been provided to the Town of Faro Interpretive Centre each year since. At least 75 people visited the weir over the course of operations this year.

ACKNOWLEDGMENTS

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⁵ In 2008, fish may have held back because of the unusually high water (Wilson 2009).

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Appendix 1. Blind Creek Chinook salmon live sampling results, 2010.

DATE	FISH#	SEX	FL (mm)	MEF (mm)	Gilbert-Rich Age*	Code**
28-Jul	1	M	740	650	5.2	
29-Jul	2	F	775	710	5.2	
30-Jul	3	M	750	685	4.2	
31-Jul	4	F	730	660	5.2	
31-Jul	5	M	760	695	4.2	
31-Jul	6	M	785	730	5.2	
31-Jul	7	F	910	845	6.2	
31-Jul	8	M	780	730	5.2	
31-Jul	9	F	870	810	5.2	
31-Jul	10	M	745	660	5.2	
31-Jul	11	F	810	745	6.3	
31-Jul	12	M	800	705	5.2	
31-Jul	13	M	735	655	5.2	
31-Jul	14	M	810	725	5.2	
31-Jul	15	M	830	740	5.2	
31-Jul	16	M	750	670	5.2	
31-Jul	17	F	815	750	5.2	
31-Jul	18	M	750	680	5.2	
4-Aug	19	M	840	NM	-	NS
5-Aug	20	M	755	665	5.2	
5-Aug	21	M	700	635	5.2	
5-Aug	22	M	785	700	5.2	
5-Aug	23	M	760	680	5.2	
5-Aug	24	M	755	675	2M	RG
5-Aug	25	F	960	885	5.2	
5-Aug	26	M	750	675	6.3	
5-Aug	27	M	790	720	5.2	
5-Aug	28	M	775	705	5.2	
5-Aug	29	M	950	850	5.2	
5-Aug	30	M	840	750	3M	RG
5-Aug	31	M	750	675	3M	RG
5-Aug	32	M	630	560	4.2	
5-Aug	33	M	840	750	S2	RS
5-Aug	34	M	800	715	5.2	
5-Aug	35	F	860	800	6.2	
5-Aug	36	M	775	705	5.2	
6-Aug	37	M	770	700	5.2	
6-Aug	38	M	760	695	-	RG
6-Aug	39	M	705	630	5.2	
6-Aug	40	M	870	785	3M	RG
6-Aug	41	M	830	750	5.2	
6-Aug	42	M	880	800	4M	RG
6-Aug	43	M	940	850	-	RG
6-Aug	44	F	920	850	6.2	
6-Aug	45	M	840	760	6.3	
6-Aug	46	M	730	670	5.2	

DATE	FISH#	SEX	FL (mm)	MEF (mm)	Gilbert-Rich Age	Code*
6-Aug	47	F	870	805	6.2	
6-Aug	48	M	840	760	5.2	
6-Aug	49	M	800	710	5.2	
6-Aug	50	F	845	790	6.2	
7-Aug	51	M	750	675	3M	RG
7-Aug	52	M	855		3M	RG
7-Aug	53	M	810		5.2	
7-Aug	54	M	765		5.2	
7-Aug	55	M	580		4.2	
7-Aug	56	M	830		-	NS
7-Aug	57	M	780		5.2	
7-Aug	58	M	560		2M	RG
7-Aug	59	M	755		6.2	
7-Aug	60	F	985		7.2	
7-Aug	61	M	840		5.2	
7-Aug	62	M	740		5.2	
7-Aug	63	F	840		6.2	
7-Aug	64	M	860		5.2	
7-Aug	65	F	880		6.2	
8-Aug	66	M	890		5.2	
8-Aug	67	M	755		4.2	
8-Aug	68	F	870		6.2	
8-Aug	69	M	825		3M	RG
8-Aug	70	F	910		7.2	
9-Aug	71	M	775		3M	RG
9-Aug	72	F	880		6.2	
9-Aug	73	M	815		5.2	
9-Aug	74	F	850		3M	RG
9-Aug	75	F	910		7.3	
9-Aug	76	M	775		5.2	
9-Aug	77	M	765		3M	RG
9-Aug	78	M	820		3M	W
9-Aug	79	M	720		5.2	
10-Aug	80	M	620		2M	RG
10-Aug	81	F	855		4M	RG
10-Aug	82	F	820		4M	RG
11-Aug	83	M	760		3M	RG
11-Aug	84	F	765		3M	RG
11-Aug	85	F	1020		5M	RG
11-Aug	86	M	830		3M	RG
11-Aug	87	F	875		6.2	
11-Aug	88	F	765		6.2	
11-Aug	89	F	925		5M	RG
11-Aug	90	F	860		6.2	
11-Aug	91	F	810		4M	RG
11-Aug	92	F	810		5.2	
11-Aug	93	F	830		6.2	
11-Aug	94	F	860		6.2	

DATE	FISH#	SEX	FL (mm)	MEF (mm)	Gilbert-Rich Age	Code*
11-Aug	95	F	870		6.2	
11-Aug	96	F	860		6.2	
11-Aug	97	M	540		4.2	
11-Aug	98	M	765		3M	RG
11-Aug	99	M	770		3M	RG
11-Aug	100	M	780		5.2	
12-Aug	101	M	765		5.2	
12-Aug	102	F	880		4M	RG
12-Aug	103	M	750		S2	RS
12-Aug	104	F	770		6.2	
12-Aug	105	F	900		6.2	
12-Aug	106	F	825		5.2	
12-Aug	107	F	845		5.2	
12-Aug	108	M	630		-	RS
12-Aug	109	M	750		5.2	
12-Aug	110	F	860		6.2	
12-Aug	111	M	855		5.2	
12-Aug	112	M	590		4.2	
12-Aug	113	F	870		3M	RG
12-Aug	114	F	865		4M	RG
12-Aug	115	F	820		7.2	
12-Aug	116	F	830		3M	RG
12-Aug	117	M	810		3M	W
12-Aug	118	F	815		4M	RG
12-Aug	119	M	820		6.2	
12-Aug	120	F	840		4M	RG
12-Aug	121	M	720		5.2	
13-Aug	122	M	760		5.2	
13-Aug	123	F	830		6.2	
13-Aug	124	F	815		4M	RG
13-Aug	125	F	840		5.2	
13-Aug	126	M	820		4M	RG
13-Aug	127	M	770		5.2	
13-Aug	128	M	955		6.2	
13-Aug	129	F	870		5.2	
13-Aug	130	M	950		6.2	
13-Aug	131	F	850		6.2	
13-Aug	132	M	815		5.2	
13-Aug	133	F	930		6.2	
14-Aug	134	M	700		5.2	
14-Aug	135	F	910		6.2	
14-Aug	136	F	780		6.3	
14-Aug	137	M	740		3M	RG
14-Aug	138	M	750		3M	RG
14-Aug	139	F	915		7.2	
14-Aug	140	F	900		6.2	
14-Aug	141	F	840		4M	RG
14-Aug	142	M	750		3M	RG
14-Aug	143	M	610		4.2	

DATE	FISH#	SEX	FL (mm)	MEF (mm)	Gilbert-Rich Age	Code*
14-Aug	144	M	710		5.2	
14-Aug	145	M	765		5.2	
14-Aug	146	F	780		3M	RG
14-Aug	147	F	900		6.2	
14-Aug	148	M	600		4.2	
14-Aug	149	F	940		7.2	
14-Aug	150	F	870		6.2	
14-Aug	151	M	595		2M	RG
14-Aug	152	M	750		3M	RG
14-Aug	153	F	870		6.2	
14-Aug	154	F	810		5.2	
14-Aug	155	M	705		5.2	
14-Aug	156	F	790		5.2	
14-Aug	157	F	780		6.2	
15-Aug	158	M	770		3M	RG
15-Aug	159	M	910		6.2	
15-Aug	160	F	800		5.2	
15-Aug	161	F	890		3M	RG
16-Aug	162	M	680		5.2	
16-Aug	163	M	740		3M	RG
16-Aug	164	F	795		5.2	
16-Aug	165	F	840		5.2	
16-Aug	166	M	620		2M	RG
17-Aug	167	M	620		4.2	
17-Aug	168	F	960		6.2	
17-Aug	169	F	795		5.2	
17-Aug	170	F	820		4M	RG
17-Aug	171	M	870		3M	RG
17-Aug	172	F	810		6.2	
17-Aug	173	M	830		5.2	
17-Aug	174	M	740		-	RG
17-Aug	175	F	810		4M	RG
17-Aug	176	F	930		5M	RG
18-Aug	177	M	645		3M	RG
18-Aug	178	M	760		4.2	
18-Aug	179	M	890		6.2	
18-Aug	180	M	525		5.2	
18-Aug	181	F	850		6.2	
18-Aug	182	M	825		5.2	
18-Aug	183	F	865		4M	RG
18-Aug	184	F	895		6.2	
18-Aug	185	M	740		5.2	

* Scale age analysis was conducted under the aegis of DFO Whitehorse by the Pacific Biological Station, Fish Ageing Lab, Nanaimo, British Columbia.

** No Ages:

RG = regenerate scale (center is missing from scale)

RS = resorbed scale (growth from margin is missing)

NS = no scale

W = Wet (mounted with too much water, glue in ridges)

Partial Ages:

S=freshwater stage

M=marine stage

Appendix 2. Blind Creek Chinook Counts from Aerial Surveys and Weir Operations, 1989, 1990, 1995-2010.

YEAR	METHOD	CHINOOK COUNTS	START DATE	ARRIVAL OF FIRST FISH	END DATE	50% of Run	90% of Run
1989	Aerial survey ^a	400	Aug 7		Aug 7		
1990	Aerial survey ^a	443	Aug 14		Aug 14		
1995	Weir	826	NR		NR		
1996	Aerial survey ^a	422	Aug ?		Aug ?		
1996	Weir	NR	July 28		Aug 17		
1997	Weir	957	July 24		Aug 22		
1998	Weir	373	July 19		Aug 19		
1999	Weir	892	July 28		Aug 22		
2000	Weir	NR	NR		NR		
2001	Aerial survey ^b	226	Aug 21		Aug 21		
2002	Aerial survey ^b	107	Aug 15		Aug 15		
2003	Weir	1,155	July 16	July 17	Aug 18	July 29	Aug 5
2004	Weir	792	July 11	July 19	Aug 15	July 30	Aug 5
2005	Weir	525	July 15	July 20	Aug 15	Aug 4	Aug 10
2006	Weir	677	July 16	July 28	Aug 17	Aug 5	Aug 12
2007	Weir	304	July 17	July 24	Aug 17	Aug 6	Aug 12
2008	Weir	276	July 25	July 28	Aug 19	Aug 12	Aug 17
2009	Weir	716	July 20	July 27	Aug 19	Aug 6	Aug 10
2010	Weir	270	July 19	July 28	Aug 19	Aug 11	Aug 16

^a aerial survey conducted by P.A. Harder and Associates Ltd.

^b aerial survey conducted by RRDC and Jane Wilson & Associates

NR - not reported

Sources for weir data: Vust 1999, Wilson 1997, 1998, 2004 - 2010

Appendix 3. Mean, Maximum and Minimum discharge in cubic metres per second for July and August, Blind Creek, 1992-2009.

	JULY Daily Discharge (m ³ /sec)					AUGUST Daily Discharge (m ³ /sec)				
	Mean	Max.	Max. Day	Min.	Min. Day	Mean	Max.	Max. Day	Min.	Min. Day
1992	9.87	13.06	14/07	6.59	31/07	4.47	6.24	01/08	3.30	27/08
1993	8.93	12.0	11/07	7.41	30/07	7.41	9.18	12/08	6.55	30/08
1994	3.92	5.50	01/07	2.52	27/07	1.48	2.61	01/08	0.94	21/08
1995	4.71	8.09	06/07	2.60	01/07	4.91	5.79	29/08	3.88	15/08
1996	4.80	8.87	12/07	2.67	31/07	3.92	7.62	30/08	2.24	03/08
1997*	4.96	9.66	25/07	2.53	04/07	9.11	10.3	01/08	7.71	03/08
1998	-	-	-	-	-	-	-	-	-	-
1999	4.49	12.5	02/07	2.12	25/07	2.25	3.20	01/08	1.93	27/08
2000	-	-	-	-	-	-	-	-	-	-
2001	8.49	16.2	17/07	5.20	31/07	3.33	5.00	01/08	2.28	18/08
2002	2.85	4.95	06/07	2.25	28/07	2.71	5.81	30/08	1.82	11/08
2003	5.25	14.6	07/07	3.26	29/07	2.49	4.27	01/08	1.37	21/08
2004	3.41	4.56	01/07	3.02	17/07	2.51	3.41	01/08	2.28	26/08
2005	4.28	5.57	19/07	3.23	12/07	2.31	4.48	01/08	1.47	18/08
2006	5.92	10.8	11/07	2.76	31/07	3.46	5.08	15/08	2.50	01/08
2007	5.60	10.8	03/07	3.36	27/07	3.03	4.93	08/08	1.43	31/08
2008	12.55	29.2	16/07	6.26	04/07	9.66	31.1	26/08	4.81	17/08
2009 ^a	3.62	6.49	11/07	1.79	31/07	2.24	4.44	27/08	0.81	07/08

* no data available for period between July 14-July 24 and after August 3.

Note: 1998 and 2000 data not available

(Water Resources, Yukon Department of Environment).

^a Preliminary data – February 10, 2009. Discharge data was not available for the period July 3-July 10.

Note: The 2010 discharge data was not available at the time of writing this report.

Appendix 4. Daily and average Chinook salmon counts in Blind Creek, 1997-1999, 2003-2010.

DATE	Daily Count 2010	Daily Count 2009	Daily Count 2008	Daily Count 2007	Daily Count 2006	Daily Count 2005	Daily Count 2004	Daily Count 2003	Daily Count 1999	Daily Count 1998	Daily Count 1997	Daily Average
11-Jul							0					0
12-Jul							0					0
13-Jul							0					0
14-Jul							0					0
15-Jul						0	0					0
16-Jul					0	0	0	0				0
17-Jul				0	0	0	0	1				0
18-Jul				0	0	0	0	1				0
19-Jul	0			0	0	0	1	2		0		0
20-Jul	0	0		0	0	1	32	0		0		4
21-Jul	0	0		0	0	0	5	2		0		1
22-Jul	0	0		0	0	1	2	4		0		1
23-Jul	0	0		0	0	0	2	2		0		1
24-Jul	0	0		1	0	0	140	1		0		18
25-Jul	0	0	0	0	0	0	24	10	0	0	122	14
26-Jul	0	0	0	0	0	2	10	17	0	0	85	10
27-Jul	0	2	0	7	0	10	20	495	0	1	66	55
28-Jul	1	8	1	3	2	8	60	2	0	0	73	14
29-Jul	1	27	1	3	9	13	33	68	0	0	64	20
30-Jul	1	12	2	10	27	105	225	95	0	0	70	50
31-Jul	17	106	1	9	26	18	36	7	0	0	44	24
01-Aug	0	84	4	8	67	15	60	45	15	0	49	32
02-Aug	0	25	1	27	8	15	34	0	65	6	77	23
03-Aug	0	24	6	6	109	35	7	7	133	34	38	36
04-Aug	1	0	3	13	25	45	15	201	50	169	60	53
05-Aug	33	22	5	8	131	46	15	75	116	16	22	44
06-Aug	23	106	11	63	19	53	27	50	73	4	33	42
07-Aug	19	67	17	59	47	54	19	12	25	5	20	31
08-Aug	5	30	26	6	63	31	4	18	129	5	43	33
09-Aug	9	110	18	20	44	18	8	1	128	1	19	34
10-Aug	4	28	11	9	14	15	2	0	139	31	21	25
11-Aug	27	20	15	4	16	14	10	8	1	25	5	13
12-Aug	23	9	19	16	28	11	1	4	0	15	16	13
13-Aug	19	7	27	14	19	7	0	18	0	9	5	11
14-Aug	40	6	20	8	11	3	0	2	0	11	1	9
15-Aug	14	13	26	6	6	5	0	2	0	18	13	9
16-Aug	6	3	23	4	5			5	0	7	8	7
17-Aug	12	4	23		1			0	0	9	3	7
18-Aug	12	3	12					0	14	3		7
19-Aug	3	0	4						4	4		3
20-Aug									0			0
21-Aug									0			0
TOTAL	270	716	276	304	677	525	792	1155	892	373	957	

Note: shaded areas denote start and end date of weir operations
 Daily weir counts were not reported in 1995

Appendix 6. Sex composition of Chinook salmon sampled in Blind Creek, 2003-2010

YEAR	Sample Size	# Females	% of Total	# Males	% of Total
2003	118	54	45.8%	64	54.2%
2004	19	8	42.1%	11	57.9%
2005	161	78	48.4%	83	51.6%
2006	101	41	40.6%	60	59.4%
2007	83	37	44.6%	46	55.4%
2008	191	88	46.1%	103	53.9%
2009	245	106	43.3%	139	56.7%
2010	185	77	41.6%	108	58.4%
Average	138	61	44.1%	77	55.9%

Appendix 7. Estimated contribution of the Blind Creek Chinook population to the Pelly River, 2003-2010.

Based on the Eagle sonar program and DFO fishwheel results						
	2010	2009	2008	2007	2006	2005
Upper Yukon Spawning escapement estimate ^a	32,010	65,278	38,008	34,903	62,933	68,551
GSI proportion of Pelly River stocks ^b	12.5% (SD 1.9)	17.2% (NR)	20.7% (SD 3.0)	21.3% (SD 2.4)	12.4% (SD 1.9)	NR
Population estimate of Pelly River origin stocks	4,001	11,228	7,868	7434	7804	-
Blind Creek weir count	270	716	276	304	677	525
Estimated % proportion of Pelly River escapement.	6.7%	6.4%	3.5%	4.1%	8.7%	-

Based on Radio Telemetry results^c		
	2004	2003
Expanded border escapement estimate	65,894	93,975
Tag proportion in the Pelly River	17.0%	19.0%
Population estimate of Pelly River origin stocks	11,202	17,855
Blind Creek weir count	792	1,155
Estimated % proportion of Pelly River escapement	7.1%	6.5%

^a Source: 2009 JTC report

^b Baseline populations used to estimate stock compositions: Little Kalzas, Earn, Glenlyon, Hoole, Pelly River, Blind Creek. Sources: JTC reports 2006 through 2010.

^c Sources: Mercer and Eiler 2004; Mercer 2005.

NR not reported

Appendix 8. Blind Creek weather and water conditions, 2010

DATE	TIME	AIR TEMP (°C)	WATER TEMP (°C)	WATER LEVEL (cm)	WEATHER
July 18	9:30	23	14	38	Sunny and warm with light breeze
July 19	9:00	17	11	38	Sunny and warm
July 20	8:15	13	10	38	Sunny in a.m. with evening thundershowers
July 21	8:20	13	13	42	Rain
July 22	8:30	14	12	41	Periodic rain showers
July 23	8:15	11	12	41	Mix sun and cloud
July 24	8:00	12	11	40	Mostly cloudy with periodic light rain showers
July 25	9:00	12	11	39	Mostly sunny, light breeze
July 26	7:50	12	11	39	Sunny and warm
July 27	8:00	11	11	38	Sunny and hot
July 28	8:00	14	12	38	Strong winds overnight, mostly sunny
July 29	8:00	10	11	37	Cool morning, sunny & hot in afternoon
July 30	8:00	14	12	37	Sunny & hot (high 34°C)
July 31	7:45	11	12	35	Mix sun and cloud (high 30°C)
Aug. 1	8:00	18	13	35	Sunny & hot with light breeze (high 34°C)
Aug. 2	8:00	12	13	35	Overcast with haze, light breeze
Aug. 3	8:00	12	12	35	Sunny and hot
Aug. 4	8.15	15	13	34	Sunny and hot
Aug. 5	8:00	15	13	33	Sunny and hot, clouding over in evening
Aug. 6	8:00	17	14	32	Mostly cloudy, warm and windy
Aug. 7	7:50	10	12	32	Cool morning, mostly sunny with dark clouds moving in by evening
Aug. 8	8:00	12	12	29	Overcast in morning, few sprinkles of rain
Aug. 9	8:00	10	11	34	Cold overnight, sunny & warm during day
Aug. 10	8:00	11	10	33	Mix sun and cloud, evening rain
Aug. 11	8:00	13	12	33	Rain overnight, periodic rain showers during the day
Aug. 12	8:00	9	11	33	Cold morning, sunny & warm during day
Aug. 13	8:15	13	11	33	Cool morning, sunny & warm during day
Aug. 14	8:20	13	12	33	Mix sun & cloud, hot during day
Aug. 15	8:00	11	11	32	Sunny & hot
Aug. 16	8:00	11	12	33	Sunny & hot
Aug. 17	8:00	14	13	40	Overcast with smoke haze, rain in late evening
Aug. 18	8:15	15	12	38	Rain overnight, clearing by afternoon
Aug. 19	8:15	9	12	39	Rain most of day

