

**Application of Coded-Wire Tags to Chinook Salmon Fry Released  
at the Whitehorse Rapids Fish Hatchery in 2005**

**Prepared by:  
Yukon Fish and Game Association:  
4061 4th Ave  
Whitehorse YT Y1A 1H1**

**Prepared for:  
Yukon River Panel  
Restoration and Enhancement Fund  
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## Abstract

A total of 112,272 fry were adipose fin clipped and injected with full size binary coded- wire tags at the chinook salmon hatchery located in Whitehorse, Yukon Territory in the early summer of 2005. Clove oil was used to anaesthetise the fry prior to clipping and tagging. Feeding was suspended for a minimum of 24 hours prior to tagging. Seven different tag codes were used, each corresponding to a separate fry release group. Tag retention was tested and averaged 99.2%. Based on this information, 953 fry were released with an adipose clip only.

Fish were released into five areas. Releases occurred on May 31, 2005 in Wolf Creek (at the campground and above the Cadet Camp) and also at a location along the mainstem Yukon River above the dam on July 7, 2005. The releases at the remaining three locations occurred on June 13, 2005 in the McClintock River, Michie Creek (at the outlet of Michie Lake), and Byng Creek (a tributary to Michie Cr.). An additional 614 fry were released unclipped and untagged (due to size and/or fitness) into Wolf Creek on July 7, 2005.

In addition to the tagging, three salmon recovery expeditions were undertaken in fall 2005 to Byng Creek, Michie Creek and M'Clintock River. Sixty-three post spawn salmon were recovered and sampled for age, length, and CWTs. Wolf Creek was monitored for beaver activity (damming) and surveys for spawning salmon performed. Chinook were reported as far upstream as the Mary Lake Cadet Camp. Ten females and thirteen males were sampled and an additional seventeen chinook were observed.

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## Introduction

Coded-wire tags (CWTs) are small, metal, coded tags that are injected into the nose cartilage of juvenile salmon. The first tags were developed in the 1960's and carried longitudinal coloured stripes. Binary-coded tags were introduced in 1971 and quickly replaced colour-coded tags because of improved readability and an increase in the number of available codes. The size of a standard CWT is approximately 0.25mm by 1.0 mm. When tagged, the juvenile fish are given a secondary, external mark, typically removal of the adipose fin, to allow visual identification (Johnson, 1990; Maddigan, 1998).

CWTs are widely used in North America. Studies involving them generally fall into one of the three following categories: experimental, stock assessment and stock contribution. Experimental studies are designed to compare the survival of two or more groups of fish, or their contribution to a specific fishery or fisheries. Stock assessment studies are designed to measure contributions to fisheries, survival rates, and distribution of a given stock. Contribution studies focus on exploitation of the stock in a fishery or fisheries and require more tagged fish to generate meaningful results (Johnson, 1990).

Groups of upper Yukon River chinook salmon have been tagged with coded wire tags annually in the Yukon Territory since 1985<sup>1</sup>, principally by Fisheries and Oceans Canada. Approximately 80% of all the fish tagged originated from the Whitehorse Rapids Fish Hatchery (WRFH). The hatchery was constructed in 1984 in concert with the construction of a fourth turbine at the Whitehorse hydroelectric facility in order to offset a perceived impact the hydro generating facility has on chinook salmon. Over the 1985 to 2005 period, the WRFH released a total of 4,935,368 chinook salmon fry. Of these, 3,479,012 fry were tagged with CWTs and externally marked using adipose fin clips. An additional 281,743<sup>2</sup> fry were released with an adipose clip but not tagged and 1,174,613 fry were released without a tag or adipose clip. Annually, 34% to 100% of the hatchery release has been tagged. The tags are applied to young of the year fry (also known as age "sub 1's" or "0 check" fry) in late May or early June, after a period of hatchery rearing<sup>3</sup>. Almost all of the fry have been released into the Yukon River system in a number of locations upstream of the hydroelectric facility.

The long-term objectives of the WRFH chinook salmon CWT program are to:

- (1) Obtain information on survival rates, exploitation rates, run timing, and distribution of chinook salmon in the upper Yukon River system.
- (2) Permit identification of returning hatchery fish in order to adhere to WRFH broodstock collection guidelines.
- (3) Obtain information on the relative success of different release groups.
- (4) To provide data upon which to base assessments of the success/failure of the WRFH in producing chinook salmon.

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<sup>1</sup> An exception occurred in 1999 when all fry released from the Whitehorse Rapids Hatchery were marked with the removal of their adipose fin, but coded wire tags were not applied.

<sup>2</sup> This total includes 240,040 fry released in 1999.

The specific goals of the 2005 WRFH chinook salmon CWT program were:

1. Apply tags to all chinook fry released from the WRFH;
2. Recover a representative sample of heads (CWT recovery) from the Whitehorse Rapids Fishway and spawning areas upstream of the dam;
3. Determine the relevance of the broodstock protocols used at the Whitehorse Rapids Hatchery through a review of the protocol used in YR 2000 – 2005 and;
4. Monitor the relative performance of different release groups.

## **Methods**

### **Coded Wire Tag Application**

Phyllis Nelson of 'Eh! Fish' was contracted to conduct the tagging and fin clipping. Two taggers and four adipose fin clippers were employed. Operations commenced on May 27, 2005 and were completed on a second trip, ending June 29th.

Fry were injected with full-size binary-coded wire tags using two Northwest Marine Technology Inc. Mark IV tagging machines provided by Fisheries and Oceans Canada. A total of ten different tag codes were used. Multiple codes were used for all release sites. This was attributable to the size of the tag lot groups.

Fry were sorted according to size and condition prior to CWT application. Small or deformed fry were not tagged. Feeding was suspended for at least 24 hours prior to tagging and resumed afterwards. Feeding was suspended again 24-48 hours prior to release.

Batches of approximately 50 fry were held in a nine-litre capacity plastic tub containing anaesthetic, for a minimum of two minutes prior to fin clipping. The anaesthetic used was a MS222 mixture. Anaesthetic baths were changed frequently to prevent thermal shock in the fry, and to refresh the anaesthetic. Once the fry were fin clipped, they were made accessible to a tagger for CWT application. After tagging, each fry was immediately passed through a quality control device (QCD) to check for successful CWT implantation. The QCD automatically detected, separated, and enumerated tagged and untagged specimens. Untagged fry were held until the end of the day or until a particular tag code was completely used. At this time, the fry were re-anaesthetised and run through the QCD again and checked a second time for CWT implantation. All untagged fry were then retagged with a CWT. Once tagging was complete, the fry were held in their rearing tanks for five days, then a sample of 100 fish was taken from each tag group and passed through a QCD for a second time to check CWT retention.

### **CWT Recovery**

The Yukon Fish and Game Association contacted volunteers and a local fisheries biologist during the early part of August to organize a work schedule to monitor tributaries upstream of the Whitehorse Dam for spawning chinook salmon and to recover carcasses. A carcass sampling kit, waders and any other materials and or equipment was collected and organized before any stream walks were done. The volunteers of the association contacted the Department of Fisheries And Oceans to inform them of the workplans and to ensure that the proper permits were acquired.

## Results and Discussion

### **Coded Wire Tagging**

Table 1. Summary of tagging and release dates for Whitehorse Rapids Fish Hatchery fry, 2005

<b>Tag Code</b>	<b>Release Location</b>	<b>Release Date</b>	<b>Number Released</b>
18-19-36 18-56-17	Wolf Creek	May 30-June 5	16,586
08-01-68	Mainstem	May 31-June 10, June 30	28,991
18-56-18 18-56-19	Byng Creek	June 8-9	10,222
18-44-19	McClintock	June 7-8	10632
02-01-65 02-01-64 08-01-65 18-56-20	Michie Creek. Outlet of Michie Lake	June 1-5	44,841
<b>TOTAL</b>			<b>111,272</b>

The total number of fry tagged at the Whitehorse Rapids Fish Hatchery and released in 2005 was 111,272. A sample of fry was collected from each tag group 5 days after tagging to determine CWT retention. Tag retention was estimated to be 99.2%. The total release of both tagged and adipose fin clipped fry was estimated to be 112,225 fish.

A total of 40 mortalities were observed during the tagging operation; these are not included in the totals above.

Fry weight at time of release ranged from 2.5 grams to 3.4 grams.

An additional 614 fry were identified as unsuitable for clipping due to small size or deformities. These fry were released into Wolf Creek, near Whitehorse, on July 7, 2005.

One difficulty encountered when evaluating differential survival based on CWT data is the requirement to obtain an adequate CWT sample from the returning adults. This requires sampling at least 20% of the return for coded wire tags. It has been difficult to mount a statistically valid sampling program in the existing fisheries (particularly the US-based fisheries) and it has been difficult to obtain samples from spawning locations due to access issues and a lack of available carcasses. To resolve this shortcoming, a representative sample of 20% of the return adult salmon could be harvested from the Whitehorse Rapids fishway, but this method of destructive sampling is not desired, particularly in years of low returns.

The broodstock collection guidelines for the WRFH, prior to YR 2000, required that the use of hatchery fish be minimized. This approach was reviewed by DFO prior to the YR 2000 broodstock program and the requirement to minimize hatchery fish for broodstock was relaxed. Broodstock selection has since been allowed to include a higher portion of hatchery fish (hatchery staff used to avoid hatchery origin fish during broodstock collection). A literature

review by DFO in Whitehorse found that hatchery broodstock requires a 10% wild component every two generations to maintain genetic diversity (Bonnell, 1999). This new approach has made the recovery of CWTs easier since more marked fish can be retained for broodstock, however, the relative sample size still remains low.

### **Salmon Recovery**

A total of one hundred and seventy-eight chinook heads were collected in the five different areas of recovery. This included thirty-seven male and thirty seven female heads collected from the Whitehorse Rapids Fishway for broodstock and eighteen salmon sampled at the Fishway due to mortalities, of which twelve were male and six were female. A number of head recovery trips also took place in headwater spawning areas (Appendix 3).

A fisheries biologist on contract, along with YFGA Board members, successfully completed three salmon recovery trips in the M'Clintock River area. Thirty-three heads were collected from spawning areas in tributaries of the Yukon River upstream of the Whitehorse Rapids Fishway. Thirteen male and ten female heads were collected from Wolf Creek, and six female and twenty male heads from Michie Creek. One male head that was partially clipped was taken from Byng Creek and one male and four female heads were taken from M'Clintock River.

### **Wolf Creek Project**

During the months of August and September 2005, volunteers from the Yukon Fish and Game Association and the general public monitored the salmon migration up Wolf Creek (Appendix 5). During this time, two beaver dams were breached to allow for unimpeded migration of the adult salmon to their preferred spawning areas. Reports of adult salmon observed above the Wolf Creek Fishway as far up as the Mary Lake Cadet Camp were noted. Ten freshly dug redds were discovered and marked with flagging tape to identify them as potential spawning areas. Ten adipose clipped females and thirteen adipose clipped males were sampled under the Department of Fisheries and Oceans protocols. Of the ten females sampled, one had not spawned and two were partial spawns. In addition at least seventeen of what appeared to be male salmon were noted but were not sampled, as efforts to capture them were unsuccessful. All coded wire heads and corresponding data was delivered to the department of Fisheries and Oceans for further analyses.

Data and observations recorded during the stream walks were collected and organized into a brief report and submitted to the Department of Fisheries and Oceans. All sampling data such as scale books, coded wire heads and any other corresponding information, was boxed up and delivered to the scientific authority at the department on September 12,2005.

The stream walks, carcasses recovery, salmon sampling and beaver dam breaching was an excellent introduction into the local stewardship of Wolf Creek and reinforced the importance of this salmon-bearing stream. The salmon migration up Wolf Creek was earlier than in past years, which may be an indication the beaver dams could have been breached sooner but from reports of adult salmon observed at the Mary Lake Cadet Camp and at the Wolf Creek Fishway the effort was partially successful. The ten freshly dug redds and adult salmon observed in the creek during stream walks was promising for future natural recruitment. It may be of interest to note that many of the new redds were found in the exact same areas that redds were found to be dug

in years previously. In all ten adipose clipped female salmon were sampled of which one was un-spawned and two were partial spawned. In addition thirteen male adipose clipped salmon were sampled. It is presumed that all adipose clipped salmon are of hatchery origin, which may conclude that no natural recruitment from those year classes was successful. Further conclusions may be available once the Department of Fisheries and Oceans analyze the scale samples and the coded wire heads.

### **Recommendations**

- 1) All of the WRFH chinook salmon fry released should be marked so that visual identification is possible and broodstock collection protocols can be followed. A visual mark allows specific control over how many returning hatchery-origin chinook are used in the broodstock program. Marking (both visual and CWT) of artificially propagated fry is also a recommendation of the Yukon River Panel.
- 2) Recovery effort of post-spawn fish in upstream spawning tributaries should be improved. Collection of additional tags (CWT) after spawning would allow further assessment of stocking performance and survival.
- 3) A detailed assessment of the performance of the various release groups (by location, size at release, etc...) needs to be completed and changes to the stocking plan should be made to reflect those results.
- 4) Additional assistance be provided to staff at the Whitehorse Fishway to enable more adequate sampling of adult chinook salmon.
- 5) Future work on the McClintock should begin with an aerial survey of the area immediately downstream of the falls and if few fish are present, ground surveys should begin below the large debris jam that blocks the channel (both for safety and protection of equipment)



## **Literature Cited**

JTC (Joint United States/Canada Yukon River Technical Committee). 2004. Yukon River salmon season review for 2004 and Technical Committee Report. December 2004. Whitehorse, Yukon Territory.

Johnson, Kenneth J. 1990. Regional Overview of Coded Wire Tagging of Anadromous Salmon and Steelhead in Northwest America. American Fisheries Symposium 7:782-816.  
Whitehorse Rapids Fish Hatchery Staff. 2005. Whitehorse Rapids Fish Hatchery Final Report. The Yukon Fish and Game Association, Whitehorse, Yukon.

Bonnell, Greg. 1999. Genetic Practices For Hatcheries. Fisheries & Oceans Canada, Pacific Region, Habitat Enhancement Branch. Supplementation Workshop, July, 1999.

# Appendix 1

## Wolf Creek Samples

### MALES SAMPLED

<i>Date</i>	<i>Scale Book and Row #</i>	<i>Fork &amp; Post Orbital Length</i>		<i>Head #</i>	<i>Comments</i>
Aug 29	43282 1 to 10	790 cm	640 cm	449047E	
Aug 29	43282 10 to 21	760 cm	570 cm	449048E	
Aug 29	43282 21 to 30	690 cm	530 cm	449071E	
Aug 29	43282 31 to 40	500 cm	450 cm	449054E	SPTAGA00946
Aug 29	43282 41 to 50	760 cm	640 cm	003399E	
Aug 29	43286 1 to 10	670 cm	540 cm	003340E	
Aug 29	43286 10 to 21	780 cm	600 cm	003339E	
Aug 29	43286 21 to 30	720 cm	530 cm	449066E	
Aug 29	43286 31 to 40	690 cm	520 cm	449067E	
Aug 29	43286 41 to 50	1010 cm	740 cm	449068E	
Sept 5	43287 1 to 10	740 cm	560 cm	003335E	
Sept 5	43287 10 to 21	800 cm	620 cm	003334E	
Sept 5	43287 21 to 30	680 cm	510 cm	288478E	

### FEMALES SAMPLED

<i>Date</i>	<i>Scale Book and Row #</i>	<i>Fork &amp; Post Orbital Length</i>		<i>Head #</i>	<i>Comments</i>
Aug 29	43283 1 to 10	900 cm	720 cm	449049E	
Aug 29	43283 10 to 21	920 cm	700 cm	449050E	Un-spawned
Aug 29	43283 21 to 30	870 cm	680 cm	449051E	
Aug 29	43283 31 to 40	830 cm	630 cm	449052E	
Aug 29	43283 41 to 50	730 cm	580 cm	449053E	Partial Spawn
Aug 29	43284 1 to 10	670 cm	540 cm	449072E	Partial Spawn
Sept 5	43284 11 to 20	890 cm	690 cm	003398E	
Sept 5	43284 21 to 30	870 cm	660 cm	449055E	
Sept 5	43284 31 to 40	810 cm	640 cm	288477E	
Sept 5	43284 41 to 50	930 cm	700 cm	288482E	

## Appendix 2

<b>BUDGET FOR WHITEHORSE CODED WIRE TAGGING</b>	Budget	YTD September 15
CWT (150,000 @ \$77usd/1000)	13,860	12976.34
CWT application and clipping (contract @ .085/fish) & \$ 1200 air travel (estimated)	13,950	10,202.12
Shipping - CWT machine on loan from southern hatchery	720	795.78
Shipping - CWT head samples	in-kind	0
Anaesthetic (MS-222)	200	in-kind
Spare/replacement cutter	in-kind	0
Scissor repair/replacement	750	730.48
CWT recovery on spawning grounds	11,500	10,647.84
Fishway Contribution (sampling)	8,000	8,000
Report Writing	2,000	2,000
Sub-Total		45,352.56
Administration (10%)	5,098	4535.26
Sub-Total	56,078	49,887.82
GST (7%)	3,926	3492.15
<b>TOTAL</b>	<b>60,004</b>	<b>53,379.97</b>

## Appendix 3

### *Can-nic-a-nick Environmental Sciences*

138 Arctic Drive, Box 10106 ♦ Whitehorse, Yukon Y1A 7A1 ♦ Phone: (867) 668-4682 ♦ Email:  
[Mtrout@northwestel.net](mailto:Mtrout@northwestel.net)

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This letter serves notice of additional information that was collected during the Yukon Fish and Game CWT Recovery project on the M'Clintock River and Michie and Byng creeks. The overall purpose of the project was to recover CWT information from spent Chinook salmon carcasses that originated from fry plantings in years past from the Whitehorse Rapids Fish Hatchery. In addition to the collection of CWT's, salmon redds and adult Chinook carcasses and live fish were enumerated as part of the project. All technical data (scale books and carcass heads) were delivered upon project completion to DFO, Whitehorse. The following are the results of enumeration surveys that occurred between August 27 and September 5, 2005.

#### **M'Clintock River (M'Clintock Falls to Michie Creek confluence)**

- 54 adult chinook enumerated (carcasses and live fish) by boat
- 30 salmon redds enumerated
- 10 spent chinook carcasses sampled (5 hatchery origin)

#### **Byng Creek (Trail crossing to confluence with Michie Creek)**

- 1 adult spawning chinook enumerated by aerial survey
- 4 adult chinook enumerated (carcasses and live fish) by foot
- 6 salmon redds enumerated
- 2 spent chinook carcasses sampled (both hatchery origin)

#### **Michie Creek (Michie Lake outlet to Byng Creek Confluence)**

- 340 adult spawning chinook enumerated by aerial survey
- 331 adult chinook enumerated (carcasses and live fish) by foot
- 121 salmon redds enumerated
- 45 spent chinook carcasses sampled (23 hatchery origin)

#### **Michie Creek (below Byng Creek confluence to abandoned beaver dam)**

- 6 spent chinook carcasses sampled (3 hatchery origin)

Based on the above results the project was successful in recovering a significant amount of data. The record run of adult Chinook salmon through the Whitehorse Rapids Fish Ladder in 2005 greatly added to the recovery of many CWT's. The timing of the project was near perfect as the success of project of this type is dependant on the density of carcasses. Based on experience from previous years, whole carcasses in this system are quickly consumed by various predators and scavengers.

## Appendix 4

### Recovery Schedule

#### **Saturday August 27 – Pat Hogan, Pat Anderson and Nick de Graff**

- 8am Tami and Nick to rendezvous at Capitol Helicopters at the airport for take off.
- 9am complete survey in helicopter and arrive at M'Clintock falls, unload and begin salmon recovery
- 10am helicopter to highway to pick up Pat and rest of supplies
- 10:30 Pat arrives by helicopter to falls and joins the recovery. Begin the float trip down the river
- @2pm Sherri and/or husband to pick up truck from Norcan. Head out to McPherson rentals to get trailer and quads for the next day. Will have to store them some where safe overnight. Verify that quads will have full tanks of gas, and that there are two extra full gerry cans.
- @7pm river crew to arrive back at the bridge and load into Pat's crew cab for the ride back to town.  
\*someone will need to re-organize supplies for the next day. The cooler will need to be re-stocked with food.

#### **Sunday, August 28 – Nick de Graff, Sherri & Peter Boniface**

- 8:30 pick up volunteers in town and head out to Carcross cut off to rendezvous with Nick
- 9am head out to the M'Clintock bridge and turn left after it. Begin the drive to the large field where the ATVs can be unloaded. Proceed down the trail to Byng creek.
- 2pm arrive at **Bing**, commence with salmon recovery
- 4pm head back to vehicles
- 6pm load quads onto vehicles, head back to town for drop off

#### **September 5th – Nick de Graff, Sherri & Peter Boniface**

- 8:30 pick up volunteers in town and head out to Carcross cut off to rendezvous with Nick
- 9am head out to the M'Clintock bridge to go in the same area as past weekend.
- 2pm arrive at **Mitchie**, begin salmon recovery process
- 4pm head back to vehicles
- 6pm load quads onto vehicles, head back to town for drop off

## Appendix 5

### Wolf Creek Project Summary

#### Stream Walk #1:

On August 14, 2005 at 5:45pm, volunteers from the Yukon Fish and Game Association met at the Wolf Creek Campground and preceded to walk the trail that leads to confluence of Wolf Creek where it flows into the Yukon River. The creek was walked up stream to look for salmon and or barriers. The primary objective of the first stream walk was to locate any barriers, which may impede salmon migration. During the stream walk two beaver dams were identified as having the potential to impede salmon migration to the upper sections of Wolf Creek. An estimated 40 adult Chinook salmon had entered the Wolf Creek system, which was about two weeks earlier than previously observed. It has been documented that the salmon migrating up the creek usually hold and pool at the confluence of Wolf Creek for quite some time before starting their final migration up the creek. This year with the near record amount of adult salmon passing through the Fishway it is believed that the fish moved into the system sooner because of the higher numbers in the system. Adult salmon were noted holding below the first beaver dam and the Yukon Fish and Game Association volunteers organized a beaver dam breaching session to be accomplished as soon as possible. No adult were observed above the first beaver dam. No redds were encountered.

#### Breach Beaver Dams #1:

On August 16, 2005 volunteers from the Yukon Fish and Game Association, students from the Whitehorse Rapids Fishway, and persons from the general public met at the Wolf Creek Campground. The objective of the meeting was to breach the beaver dams located on the first stream survey. On August 15, the Department of Renewable Resources YTG organized a public presentation of the hatchery program, Fishway and the Wolf Creek program. During this talk members from the public in attendance were informed about the beaver dam breaching project organized for the next day. In all, ten volunteers were recruited to breach the beaver dams.

The beaver dam furthest up stream from the confluence of the Yukon River was approached and it was noted that approximately six adult salmon had migrated over the first beaver dam down stream. This dam had no new cut branches and was more than likely built the year before. The dam was easily beached to allow the adults holding below a safe passage up stream.

The first beaver dam from the confluence of the Yukon River was approached and it was noted that at least 10 adult salmon were pooling below it and making attempts to jump over this natural barrier. The building material was new freshly cut poplars and willows and was somewhat bigger than observed two days prior. The dam was breached down one quarter to allow for the salmon holding to move up the creek.

On August 17, 2005 volunteers from the Yukon Fish and Game Association revisited the beaver dam sites to see if the salmon had in fact moved up the creek. The first beaver dam breached the day before had been abandoned as no fresh building materials were noticed. All salmon from the previous day had moved up the creek.

The second beaver dam had been repaired by the beavers over night but the salmon noted to be pooling from the previous day were not seen. It was hoped that these salmon had migrated up the creek before the repair was established.

### **Stream Walk #2:**

On August 29, 2005 at 3:30pm, volunteers from the Yukon Fish and Game Association met at the Wolf Creek Campground and preceded to walk the trail that leads to confluence of Wolf Creek where it flows into the Yukon River. The creek was walked up stream to look for salmon and or barriers, which may impede the salmon migration.

As soon as the volunteers entered the creek, salmon were noted, many of which were still very lively and active. The first fish encountered were males and attempts were made to capture as many as possible for sampling. The attempts were in vain plus it was discussed that they were not finished spawning so more effort was made into looking for redds and spent carcasses.

After walking the creek for about one half and hour the first carcass was discovered which was a female. From then on caution was taken to look for redds as to not disturb the areas around them.

In all, six female and ten male carcasses were found and sampled. All the salmon sampled had clipped adipose fins and were presumed to be of hatchery origin. Six redds were discovered and flagged with orange tape as to avoid these areas on the next stream walk. At least 3 females were also noted accompanied by a number of males and were actively trying to dig redds to lay their eggs. One female accompanied by at least 5 males was noticed holding below the first beaver dam. Full results can be found on Appendix 1.

### **Breach Beaver Dams #2:**

During the second creek walk salmon were found pooling below the first beaver dam up stream from the confluence of the Yukon River. The beaver dam had freshly cut poplars and willows built up around the previously breached area. Volunteers from the Yukon Fish and Game Association and students from the Whitehorse Rapids Fishway breached the dam one quarter of its original size in hopes to allow the adults holding below it to move up the creek.

The second beaver dam was inspected and it had remained totally open. This dam had been abandoned as no new building material was observed and no salmon were noticed holding below the original structure.

Many people use the Wolf Creek trails during the summer for recreational activities. There were reports that salmon were observed above the Alaska Highway culvert passed the Mary Lake Cadet Camp. One spaghetti tagged male salmon was observed above the Wolf Creek Fishway just below the highway culvert. These observations were an indication that some adult salmon had migrated successfully passed the beaver dam barriers.

### **Stream Walk #3:**

On September 5 2005 at 4:00pm, it was a rainy overcast day. Volunteers from the Yukon Fish and Game Association meet at the Wolf Creek Campground, and preceded to walk the trail that

leads to confluence of Wolf Creek where it flows into the Yukon River. The creek was walked up stream to look for salmon and or barriers, which may impede the salmon migration.

Male salmon carcasses were encountered as soon as the volunteers entered the creek. As the crew walked closer to the first redds marked on stream walk # 2, they found spawned out female carcasses. Special care was taken around the areas that the females were recovered as not to disturb any redds that may be present. Four new freshly dug redds were identified and marked with orange flagging tape.

In addition to the above at least twelve males were observed but could not be captured for sampling. Full results can be found in Appendix 1.



# CWT AND ASSOCIATED NON-CWT GROUPS RELEASE REPORT

HATCHERY/PROJECT CONTACT

Whitehorse Rapids Fish Hatchery/Enhancement  
Lawrence Vano - Operations Manager

SPECIES

CN-124

(Yukon River Chinook)

DATE

CWT TAG CODE	REP	BROOD YEAR	RUN	STUDY	EXPID	STOCK TYPE	STOCK	RELEASE	REL PERIOD	REL STAGE	CODED WIRE TAGGED FISH				FINCLIP	NUMBER	PARTIAL CLIPS	
											CWT FINCLIP	# CWT TAGGED	# SHED CWT	SAMPLE SIZE				TAGLOSS
											CODE	CODE	DDMMYY	DAYS %				
Ag D1 D2				R S														
18-19-36		2004	2	H P		W	Yukon River	Wolf Creek	310505 050605	FF	Adipose	10,751	109	100	5 1.0		0	
COMMENTS	Tagged 10,862 - 2 mortalities = 10,860 x 1.0% tag loss = 109 clipped with no tag and 10,751 clipped with tag retained.																	
18-56-17		2004	2	H P		W	Yukon River	Wolf Creek	310505 050605	FF	Adipose	5,835	59	100	5 1.0		0	
COMMENTS	Tagged 5,835																	
18-56-18		2004	2	H P		W	Yukon River	Byng Creek	130605	FF	Adipose	5,853	119	100	5 2.0		0	
COMMENTS	Tagged 5,974 - 2 mortalities = 5,972 x 2.0 % tag loss = 119 clipped with no tag and 5,853 clipped with tag retained.																	
18-56-19		2004	2	H P		W	Yukon River	Byng Creek	130605	FF	Adipose	4,369	89	100	5 2.0		0	
COMMENTS	Tagged 4,459 - 1 mortality = 4,458 x 2.0 tag loss = 89 clipped with no tag and 4,369 clipped with tag retained.																	
18-44-19		2004	2	H P		W	Yukon River	McClintock R.	130605	FF	Adipose	10,632	0	533	5 0		0	
COMMENTS	Tagged 10,635 - 3 mortalities = 10,632 x 0 % tag loss = 10,632 clipped with tag retained.																	

# CWT AND ASSOCIATED NON-CWT GROUPS RELEASE REPORT

**HATCHERY/PROJECT CONTACT** Whitehorse Rapids Fish Hatchery/Enhancement  
Lawrence Vano - Operations Manager

**SPECIES** CN-124 (Yukon River Chinook)

**DATE**

CWT TAG CODE	REP	BROOD YEAR	RUN	STUDY	EXPID	STOCK TYPE	STOCK	RELEASE	REL PERIOD	REL STAGE	CODED WIRE TAGGED FISH				FINCLIP	ASSOCIATED NON-CWT FISH	NUMBER
											# CWT TAGGED	# SHED CWT	SAMPLE SIZE	TAGLOSS			
02-01-64		2004	2	H P		W	Yukon River	Michie Creek	130605	FF	Adipose	4,870	0	540	5 0		
<b>Comments</b>		Tagged 4,874 - 4 mortalities = 4,870 x 0% tag loss = 4,870 clipped with tag retained.															
02-01-65		2004	2	H P		W	Yukon River	Michie Creek	130605	FF	Adipose	5,983	0	521	5 0		
<b>Comments</b>		Tagged 5,988 - 5 mortalities = 5,983 x 0% tag loss = 5,983 clipped with tag retained.															
08-01-65		2004	2	H P		W	Yukon River	Michie Creek	130605	FF	Adipose	28,082	284	506	5 1.0		
<b>Comments</b>		Tagged 28,370 - 4 mortalities = 28,366 x 1.0 % tag loss = 284 clipped with no tag and 28,082 clipped with tag retained.															
18-56-20		2004	2	H P		W	Yukon River	Michie Creek	130605	FF	Adipose	5,906	0	530	5 0		
<b>Comments</b>		Tagged 5,909 - 3 mortalities = 5,906 x 0% tag loss = 5,906 clipped with tag retained.															
08-01-68		2004	2	H P		W	Yukon River	Mainstem	020605 140605 070705	FF	Adipose	28,991	293	800	5 1.0		
<b>Comments</b>		Tagged 29,300 - 16 mortalities = 293 clipped with no tag and 28,991 clipped with tag retained.															

PLE NUM	DATE	RECOVERY LOCATION	POHL	IPOSE	C	SEX	CONDITION	SCALE BOOK	SCALE #	HEAD TAG #
1	27-Aug-05	M'Clintock River (below falls - above logjam)	580	Yes		M	Spent Dead Carcass	35901	1-5	14481
2	27-Aug-05	M'Clintock River (below falls - above logjam)	725	Yes		F	Spent Dead Carcass	35901	6-10	12317
3	27-Aug-05	M'Clintock River (below falls - above logjam)	780	Yes		F	Spent Dead Carcass	35901	11-15	14482
4	27-Aug-05	M'Clintock River (below falls - above logjam)	700	Yes		F	Spent Dead Carcass	35901	16-20	14483
5	27-Aug-05	M'Clintock River (below falls - above logjam)	705	No		F	Spent Dead Carcass	35901	21-25	-
6	27-Aug-05	M'Clintock River (below falls - above logjam)	630	Yes		F	Spent Dead Carcass	35902	1-5	14484
7	27-Aug-05	M'Clintock River (below falls - above logjam)	620	No		F	Spent Dead Carcass	35902	6-10	-
8	27-Aug-05	M'Clintock River (below falls - above logjam)	700	No		F	Spent Dead Carcass	35902	11-15	-
9	27-Aug-05	M'Clintock River (below falls - below logjam)	695	No		F	Spent Dead Carcass	35902	16-20	-
10	27-Aug-05	M'Clintock River (below falls - below logjam)	660	No		M	Spent Dead Carcass	35902	21-25	-
11	28-Aug-05	Byng Creek, Yukon	585	Yes		M	Spent Dead Carcass	35903	1-5	12316
12	28-Aug-05	Byng Creek, Yukon	675	(Partial cl		M	Spent Dead Carcass	35903	6-10	12494
13	28-Aug-05	Michie Creek (below Byng Creek confluence)	715	Yes		F	Spent Dead Carcass	35903	11-15	124946
14	28-Aug-05	Michie Creek (below Byng Creek confluence)	585	No		M	Spent Dead Carcass	35903	16-20	-
15	28-Aug-05	Michie Creek (below Byng Creek confluence)	525	Yes		M	Spent Dead Carcass	35903	21-25	124942
16	28-Aug-05	Michie Creek (below Byng Creek confluence)	645	No		F	Spent Dead Carcass	35904	1-5	-
17	28-Aug-05	Michie Creek (below Byng Creek confluence)	765	Yes		F	Spent Dead Carcass	35904	6-10	124944
18	28-Aug-05	Michie Creek (below Byng Creek confluence)	580	No		M	Spent Dead Carcass	35904	11-15	-
19	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	725	Yes		F	Spent Dead Carcass	35905	1-5	124940
20	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	610	Yes		M	Spent Dead Carcass	35905	6-10	124941
21	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	735	Yes		F	Spent Dead Carcass	35905	11-15	124943
22	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	600	Yes		M	Spent Dead Carcass	35905	16-20	12494I
23	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	650	No		M	Spent Dead Carcass	35905	21-25	-
24	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	645	No		M	Spent Dead Carcass	35906	1-5	-
25	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	650	No		F	Spent Dead Carcass	35906	6-10	-
26	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	560	No		M	Spent Dead Carcass	35906	11-15	-
27	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	565	No		M	Spent Dead Carcass	35906	16-20	-
28	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	665	No		F	Spent Dead Carcass	35906	21-25	-
29	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	530	Yes		M	Spent Dead Carcass	35907	1-5	12494A
30	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	595	No		M	Spent Dead Carcass	35907	6-10	-
31	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	595	Yes		M	Spent Dead Carcass	35907	11-15	12494F
32	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	660	No		F	Spent Dead Carcass	35907	16-20	-
33	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	560	Yes		M	Spent Dead Carcass	35907	21-25	12494H
34	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	530	Yes		M	Spent Dead Carcass	35908	1-5	12494D
35	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	635	No		M	Spent Dead Carcass	35908	6-10	-
36	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	595	No		M	Spent Dead Carcass	35908	11-15	-
37	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	550	No		M	Spent Dead Carcass	35908	16-20	-
38	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	650	No		M	Spent Dead Carcass	35908	21-25	-
39	01-Sep-05	Michie Creek (between Michie Lake and Byng Creek)	645	No		F	Spent Dead Carcass	35909	1-5	-
40	01-Sep-05	Michie Creek (upper Michie Creek)	530	Yes		M	Spent Dead Carcass	35909	6-10	124945
41	01-Sep-05	Michie Creek (upper Michie Creek)	605	No		M	Spent Dead Carcass	35909	11-15	-
42	01-Sep-05	Michie Creek (upper Michie Creek)	610	Yes		M	Spent Dead Carcass	35909	16-20	12494E
43	01-Sep-05	Michie Creek (upper Michie Creek)	605	Yes		M	Spent Dead Carcass	35909	21-25	12494B
44	01-Sep-05	Michie Creek (upper Michie Creek)	550	Yes		M	Spent Dead Carcass	35910	1-5	12494G
45	01-Sep-05	Michie Creek (upper Michie Creek)	665	Yes		F	Spent Dead Carcass	35910	6-10	12494J

**McClintock River Phase 1 - August 27th**

**2 volunteers and 1 biologist**

	<u>Budget</u>	<u>Actual</u>
YFGA volunteers	\$840	\$840
Supplies	\$1,080	\$952
Transportation	\$3,000	\$2,487
Biologist	\$450	\$450
Sub total	\$5,370	\$4,729
Administration fees	10% \$537	\$473
Total	\$5,907	\$5,202
GST	7% \$413.49	\$364.14
<b>Total</b>	<b>\$6,320.49</b>	<b>\$5,566.14</b>

**Bing/Mitchie - Sept long weekend**

**2 volunteers and 1 biologist**

	<u>Budget</u>	<u>Actual</u>
YFGA volunteers	\$1,155	\$840
Supplies	\$550	\$327.01
Transportation	\$925	\$577.85
Biologist	\$450	\$450
Sub total	\$3,080	\$2,194.86
Administration Fees	10% \$308	\$219
Total	\$3,388	\$2,414
GST	7% \$237	\$169
<b>Total</b>	<b>\$3,625</b>	<b>\$2,583</b>

**Bing Creek - August 28th**

**2 volunteers and 1 biologist**

	<u>Budget</u>	<u>Actual</u>
YFGA volunteers	\$1,050	\$840
Transportation	\$950	\$726
Supplies	\$200	\$107
Biologist	\$450	\$450
Sub total	\$2,650.00	\$2,123.23
Administration fee	\$265	\$212
Total	\$2,915	\$2,404
GST	\$204.05	\$168.26
<b>Total</b>	<b>\$3,119.05</b>	<b>\$2,498.70</b>

