

**MCINTYRE CREEK  
SALMON INCUBATION PROJECT  
2003-2004**



**YUKON RIVER SALMON RESTORATION AND ENHANCEMENT FUND  
Project # CRE65-03CP**

March 2004 Project Report

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## **MCINTYRE CREEK SALMON INCUBATION PROJECT**

### **YUKON RIVER SALMON RESTORATION AND ENHANCEMENT FUND**

#### **Project # CRE 65-03CP**

#### **March 2004 Project Report**

#### **Abstract:**

The objectives of the McIntyre project in 2003-2004 were: to take eggs, incubate, rear, apply coded wire tags and release groups of chinook fry back into Takhini River, and Tatchun Creek; to continue to modify and test various small scale salmon incubation techniques; to monitor returning adults and fry that have been released to determine the effectiveness of the incubation, tagging and releasing strategies and to gather information on adult interception and survival; to provide eyed eggs, and a facility for their incubation to schools around the Yukon, and to provide a site for Yukon students and the general public to visit to learn about salmon and their habitat through studying the adjacent McIntyre Creek; to foster stewardship of the salmon by involving personnel at Yukon College (students and instructors) in the care of the salmon, and by making them aware of the habitat requirements of salmon in hatcheries and in the wild through hands on experience, and through training them in the Streamkeepers techniques; and to provide training and employment to Yukon College students in egg takes, incubation, rearing and sampling of juvenile chinook salmon.

Over 24,000 Tatchun fry and 40,000 Takhini fry were reared, coded-wire tagged and released in the summer of 2003. Releases were later than planned due to the tagging schedule. A new heath tray shelter and water supply, a sediment settling box, and a debris drains in the reservoir were installed at the site for the 2003 incubation season to improve the incubation environment. A heat monitoring system was set up to assess heating requirements: Malfunctioning equipment resulted in no heat being supplied to the new box during the cold spell. Conditions in the unheated box indicated that no heat was needed. A new downstream fish screen was installed to replace one damaged by beavers, and to ensure that fish could be contained in the event of a spill. A Moist Air Incubator was set up and used to incubate 19000 of the Tatchun eggs in a trial otolith marking project. It operated for a shorter time than planned due to difficulties with set up. Otoliths will be examined in 2005 to determine the success of the mark. Limited fry trapping at Flat Creek indicated that the wild fry growth had surpassed the incubated fry growth by the time of release, indicating a need to accelerate the tagging. Posters advertising prizes for coded wire tag recovery were circulated to the Yukon River Fishery through Fisheries and Oceans Canada and Alaskan Department of Fish and Game, but did not result in head recoveries. One coded wire tagged chinook was found during examination of salmon broodstock. 61000 eggs from Tatchun Creek and 85000 chinook eggs from Takhini River were taken in the 2003 season. Dead eggs were removed and counted, often with difficulty and doubtful accuracy due to decomposition. An estimated 35000 Tatchun eggs and 61000 chinook eggs survived to the fry stage. Survival numbers will be verified when fry are counted during tagging. Sixteen Yukon schools used eggs eyed at this site for classroom incubation projects in the 2003-2004 schools in the Yukon. Ten schools had classes visit the site in spring 2003 and Northern Research Institute and Streamkeepers North Society hosted an Oceans Day Open House on June 8th. Two Renewable Resources program class sessions took place at the McIntyre site, and several more workshops for small groups of students in the Renewable Resources program were held to cover most aspects of the incubation project. Yukon College students supplied labour for all periods of incubation at

the site. One student took on management of the site in December. They plan to be involved with all aspects of the project in the upcoming season.

### **Introduction:**

The McIntyre Creek Incubation project was administered by the Northern Research Institute in 2003-2004. The Institute has worked with Yukon College Renewable resources students, partner organizations and contractors to operate the site since the spring of 2002. Students were involved with the rearing of the 2002 chinook fry that were ponded in the spring of 2003, and with a bit of the construction work over the summer of 2004. However, other organisations and contractors fulfilled many of the project duties, including making many changes at the incubation site, between May and September.

This year a small group of Renewable Resources students participated in a series of workshops about all aspects of the McIntyre project. The workshops were offered by Fisheries and Oceans during the academic year with the goal of increasing the students' role in the project. These students have been working on maintenance at the site and now fulfil most of the labour needs at the site. A student was hired as a project manager in December, giving the students the responsibility of ensuring completion of the project tasks. They are expected to accomplish most of the tasks in the upcoming season.

Project tasks in the 2003-2004 season were based on the project objectives:

- To take eggs, incubate, rear, apply coded wire tags and release groups of chinook fry back into Takhini River, and Tatchun Creek;
- To continue to modify and test various small scale salmon incubation techniques;
- To monitor returning adults and fry that have been released to determine the effectiveness of the incubation, tagging and releasing strategies and to gather information on adult interception and survival;
- To provide eyed eggs, and a facility for their incubation to schools around the Yukon, and to provide a site for Yukon students and the general public to visit to learn about salmon and their habitat through studying the adjacent McIntyre Creek;
- To foster stewardship of the salmon by involving personnel at Yukon College (students and instructors) in the care of the salmon, and by making them aware of the habitat requirements of salmon in hatcheries and in the wild through hands on experience, and through training them in the Streamkeepers techniques;
- And, to provide training and employment to Yukon College students in egg takes, incubation, rearing and sampling of juvenile chinook salmon.

### **Ponding and Rearing:**

Yukon College students moved fry into two Capilano troughs in late March and early April, 2003. They looked after the daily feeding and cleaning until the chinook fry were released after tagging, some in early July and some in late July. The rotting of the interior of the old Takhini incubation box made transfer of fry quite difficult and time-consuming.

Flow in each of the Capilano troughs was initially set at about 50 LPM, and was increased to 100 LPM by the end of April, and to about 150 LPM in June. The third

trough was reconnected at 150 LPM in June, so that Takhini fry could be separated into two smaller batches.

Fry were fed EWOS Vextra Start Crumble #1, using 24 hour Ziegler belt feeders. In April the total amount of food fed daily reached a maximum of about 350 grams per day. This increased to a maximum of about 1100 grams per day in early July.

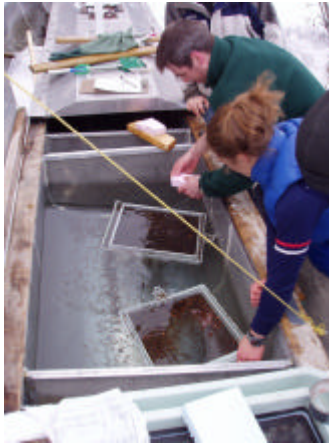
Tanks were cleaned daily, using brooms and flow control to gently channel the settled solids to the tank outlet.

Fry were sampled for weight and length a weekly basis.

(See Appendix A: McIntyre Chinook Fry Sampling 2003)

### **School Visits:**

Ten schools visited the site in the spring of 2002, eight of them as part of their fry release field trip. The Northern Research Institute and Streamkeepers North Society also hosted an Oceans Day Open House, with refreshments, quizzes and prizes, at the site on June 8<sup>th</sup>.



Ponding Fry



Takhini Chinook Fry

### **Tagging:**

Phyllis Nelson was not available to do the coded wire tagging in 2003. Instead, she recommended a tagger who had assisted at the Whitehorse Rapids hatchery tagging, and who had field tagging experience with DFO. He tagged the fry, working with crews that included students from Yukon College, and at various times, high school students. Scheduling and personnel changes resulted in the tagging starting later and taking longer than expected. Over 24,000 Tatchun fry and 40,000 Takhini fry were tagged between June 23<sup>rd</sup> and July 21<sup>st</sup> 2003.

(See Appendix B: McIntyre CWT 2003.)

NRI purchased Coded wire tags in preparation for 2004 fry tagging. Phyllis Nelson was contacted to schedule tagging for June 2004.

### **Releasing:**

DFO and Y2C2 personnel released the chinook fry between July 4<sup>th</sup> and July 22<sup>nd</sup> of 2003. 24,300 fry were released at Tatchun Creek on July 4, 2003. Fry trapping carried out on the date of the release indicated that wild fry in the creek were very close in size to

the released fry: The average size of the released fry was 52mm and 1.4 grams. The average size of the wild fry was 53 mm and 1.4 grams. 34,300 fry were released into the Takhini River at the Takhini River campground on July 21<sup>st</sup>, and 6400 fry were released into Flat Creek (Takhini River tributary) on July 22<sup>nd</sup>. The average weight of the released fry was 55 mm and 1.7 grams. Y2C2 assisted with the Takhini River and Flat Creek releases. Due to the late date of the fry release, Yukon College Students were employed elsewhere and were unable to assist.

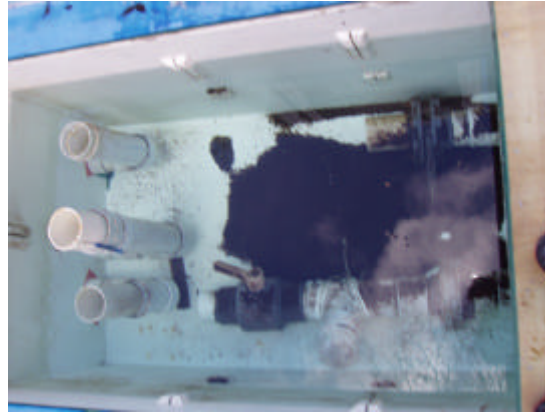
### **Site preparation:**

Many changes were made at the McIntyre site in the summer of 2003, some in preparation for the June Open House, some in preparation for the incubation season, and some in preparation for a trial otolith marking project:

- A contractor installed a new downstream fish screen to replace the one that had been removed after it had been incorporated into a beaver dam in 2002.
- The original upwelling incubation box was removed and discarded as the wood had become too waterlogged and rotten to repair and reseal.
- An information board was erected near the gate for interpretive signs and notices. An interpretive sign about the project was designed, printed and posted.
- Handrails were built along several walkways to better ensure the safety of visitors and personnel.
- A contractor was hired to build 2 heath stack enclosures and build and install a new platform and shelter frame to house them. The contractor prefabricated the structures, but Y2C2 and the DFO Ed Coordinator assembled and installed them in the channel downstream of the 2003 heath stack shed. (The time-consuming nature of this work meant that several other projects- including a storage shelter- planned for Y2C2 had to be postponed until the 2004 season.)
- Yukon College students put up tarp roofs and walls over the storage shelter for winter insulation.
- Y2C2 installed a second drain at the bottom of the sheet metal dam that creates the small reservoir. This was done to improve draining (prevent build-up) of organic debris from around the intakes.
- A settling box was installed upstream of the incubation boxes to further reduce the amount of organic matter getting to the eggs. Y2C2 and DFO built the platform for the settling box. Streamkeepers volunteers assisted in connecting the box. A student employee insulated the box and fitted it with the altered lid from the old incubation box lid.
- Students fixed the gate and secured it with an upper cable to combat the difficulties caused by continuously shifting fence posts in the wet ground.
- NRI hired an electrical contractor to install the emergency heat system and the demand for heat monitoring system for the new incubation boxes. Cold weather was meant to activate the heat system to prevent freezing. The installation was very late, and the selected system (an alternative to heat tape) malfunctioned shortly after its installation. Through this series of unplanned mishaps, it was determined that these particular boxes did NOT require a back-up heat source.
- In March, Yukon College students connected the three Capilano troughs and scrubbed and disinfected them to prepare for rearing.



Settling Box: Exterior



Settling Box: Interior

### **Security system connection:**

Spectrum Security installed float and intrusion alarms on the new heath stack incubation shelters in August. They also disconnected the old incubation box system and reconnected the Capilano trough alarms when the troughs were relocated after site renovations. Spectrum continues to monitor the alarm system. Security arrangements in 2003 included the implementation of a **pager system**. The project manager or his delegate now carries a pager with text capability. The pager receives any alarm messages. This system is easily adapted to changing responsible personnel at the site.

### **Broodstock collection:**

In 2003 Chinook broodstock were caught by drift netting with 7" mesh gill nets at Takhini River between August 18<sup>th</sup> and August 24<sup>th</sup>. Chain link pens (4' x 4' x 8') were placed in an eddy to hold the salmon until ripe. Water temperatures during holding hovered between 12 and 14 degrees Celsius. 85,000 eggs were taken from 13 female chinook. Pens were removed earlier than planned after bear interference with pens resulted in the loss of one chinook. Eggs were transported to McIntyre for fertilization. They were kept in ziplock bags in coolers, with ice pacs. Milt, collected in whirl pacs after the eggs, was transported in a separate cooler with ice pacs. The DFO EC, DFO STAD personnel, and a volunteer collected broodstock at Takhini. Liability issues surrounding boat use prohibited student involvement.

(See Appendix C: Takhini River Chinook Egg Take 2003 and Appendix E: Takhini Chinook Eggs Survival 2003.)

Tatchun Creek broodstock were collected between August 17<sup>th</sup> and August 25<sup>rd</sup>. Most fish were captured through angling, as the high numbers of fish on the spawning grounds and in the pools made it difficult to net a small manageable number at a time. It was also much easier to selectively catch suitable fish (ripe but not yet spent) through angling. Fish were held until ripe in PVC tubes, 8" in diameter and about 120 cm long, with clothesline grid barriers at each end. The downstream end was removable. These tubes were secured to the bank and weighed down with rocks under cover in the creek. Water velocity through the tubes was minimised, using large rocks to block flow when eddies were not sufficient. Water temperature ranged from 14 to 17 degrees Celsius for most of the holding period, only exceeding 17 degrees for a couple of brief intervals. About



61,000 eggs were taken from 12 females, including one with a small batch of eggs that appeared mainly water-hardened (not fertilizable) upon removal from the female. Two batches of eggs were fertilized and then water-hardened in basins by the creek for at least an hour before being transported to McIntyre, to determine whether this sequence could result in better survival than fertilisation after transport. The rest of the eggs were transported to McIntyre to be fertilised. Broodstock collection at Tatchun was carried out by the DFO EC, four volunteers, including three teachers, an NRI casual employee, and a DFO HEB biologist.

(See Appendix D: Tatchun Creek Chinook Egg Take 2003 and Appendix F: Tatchun Chinook Eggs Survival 2003.)

### **Incubation:**

Each batch of Takhini River eggs was fertilised with milt from at least two males (more if milt volume or quality was questionable) and planted into heath trays, some in the 2002 heath tray shelter and some into the newly prepared 2003 heath tray shelter. Small samples of ten eggs from most batches were held in separate isolation baskets and were sacrificed after 24-48 hours to determine percent fertilisation. Fertilisation rate estimates were between 80 and 100%. The average fertility of the batches that were checked was estimated at 87%. Using this average number to estimate number of fertile eggs in the batches for which there was no fertility data, the total number of fertile eggs from Takhini was estimated at about 74,000. (Appendix E: Takhini Chinook Eggs Survival 2003)

Tatchun eggs were also fertilised with milt from at least two males and planted into egg trays in the new heath stacks. A small sample of ten eggs from most batches was sacrificed after between 24 and 48 hours to check percent fertilisation. Fertilisation rate estimates ranged from 30 to 90 %. The low fertilization rates were found in the batches of eggs that were field fertilized before transportation back to the incubation site. Excluding these batches, and the initial batch of unviable eggs, the average fertilization rate was about 86 %. The calculated estimate for the number of fertile Tatchun eggs at the site was about 48,000. (See Appendix F: Tatchun Chinook Eggs Survival 2003)

### **Moist Air Incubator:**

DFO personnel and an electrical contractor helped set up a Moist Air Incubator for trial thermal marking of otoliths. The goal was to begin assessing this technique as a possible future alternative to coded wire tagging at McIntyre.

The incubator was supposed to have the incubation temperature alternate daily between cold and warm (4 degrees C. warmer than the alternate temperature), during a 2 week period between the eyed stage and hatch.

Cold water was provided by allowing the existing water supply to run continuously through the eggs in the moist air incubator on the "cold days".

On the "warm days" the eggs were flushed at 3 hour intervals with water from a heated reservoir under the incubator. After the flushing, the reservoir drained, leaving eggs in moist air heated by a small reservoir of water at the bottom of the incubator as well as by a roasting pan reservoir at the top of the incubator. Flushing rates and intervals were controlled by timers and valves. Water was heated with immersion bucket heaters on thermostats.



Student monitors were required to turn 5 valves and two switches as part of their daily site check duties for the week that the moist air incubator functioned.

There were several problems encountered with the system. Electrical installations required more time than foreseen, so the initial marking was delayed, resulting in a shortened marking period. The temperatures of the incubator and of the reservoir during moist air (warm) incubation periods fluctuated about 5 degrees, due to the low level of sensitivity (large differential) of the thermostats. The warm temperature ranged from about 9.5 to 14 degrees Celsius.

About 19000 Tatchun eggs were held in the fluctuating temperatures for a period of 8 days. The otolith laboratory at DFO Whitehorse will examine a sample of the resultant fry in May to assess the quality of the mark.

Further trials of the system should include improved insulation of the enclosure and preferable installation of more precise thermostats.



Moist Air Incubator

### **Monitoring and Maintenance:**

Yukon College students were hired in September to monitor the site. They visited the site daily to check temperatures and flow, and to clean intakes. Weekly cleaning of the settling box and checking of eggs was also scheduled. Monitoring scheduling was originally a group effort, with students signing up for specific days. However, this system was difficult to monitor. In December one student became the site manager, responsible for ensuring that the assigned tasks and monitoring were completed, and responsible for ensuring that someone was available to deal with any alarm calls. Temperatures were checked manually with a thermometer. They were also monitored with **Hoskins Hobo temperature loggers**. Temperatures in the incubators ranged from 3 to 5.3 degrees Celsius, averaging about 4.5 degrees C. in September, and about 3.5 degrees C. in January.

Other irregular maintenance tasks at the site included shovelling, egg tray cleaning and repairs, feeder cleaning, and site cleanup.

A new water license requires quarterly testing of phosphorous and iodine levels in the effluent water prior to its mixing with McIntyre Creek. Initial phosphorous testing in February yielded undetectable (Detection Limit .005 mg/L) levels of phosphate at the

groundwater channel outlet. The phosphate level in the receiving water upstream of the groundwater channel was 0.068mg/L.

### **Egg Picking:**

Yukon College student employees removed dead eggs from the trays after a demonstration on October 7<sup>th</sup> by DFO. Egg picks then continued until December 5th. Picking of some of the trays was not as early as it should have been, due to some time commitment problems of students.

Survival from green eggs through to hatch was estimated to be about 71 % for Takhini River eggs, with survival of fertilized eggs about 82 %. An estimated 61000 eggs survived to hatch. The accuracy of the estimation is not as good as the estimation of egg take numbers due to the variation in stage of decomposition of dead eggs.

Survival of Tatchun green eggs, including the poorest batches, was estimated to be about 57 %, while survival of fertilized eggs was estimated at around 73 % for the Tatchun eggs. The estimated number of eggs surviving to hatch was 35000. The accuracy of the dead egg counts was particularly uncertain this year due to heavy fungus loads. The decayed eggs are often mushy and difficult to count.

Fry counts in the summer will yield more accurate survival data. Mortality of fertilized eggs would likely have been reduced by earlier and more frequent picking, particularly in late October.

(See Appendix E: Takhini Chinook Eggs Survival 2003 and Appendix F: Tatchun Chinook Eggs Survival 2003.)

### **Fry Trapping:**

Fry trapping was conducted at Flat Creek in the 2003 summer by Y2C2 and Yukon College. Data were entered from two fry trapping sessions, one in June (DFO with Y2C2) and one in September (Yukon College). Unfortunately data from 2 other sessions were lost due to personnel changes. The fry caught upstream of the beaver dam in June were all school-released fish, identified by an elastomer tag. The fish caught in June downstream of the beaver dam were all wild, averaging 53 mm and 1.3grams. All but one Chinook caught above the beaver dam in September were tagged fish, averaging about 67.5mm. The one apparently-wild fish captured was about 75mm. The Chinook caught in September below the beaver dam were wild, averaging 81.7mm. The size difference between wild and hatchery fish was not large, but it indicated that the release date was later than it should have been. It was later than planned in 2003 due to fry tagging logistics. (See Appendix G: Flat Creek Fry Trapping 2003.)

Future participation of community groups in the project is welcome. But, to help avoid the problem of data retention that goes along with having several people involved, future

fry trapping teams will be asked to submit electronic data right after each trapping event.



Fry sampling at Flat Creek

### **Adult Return Monitoring:**

The lower reaches of Flat Creek, below the beaver dam, were checked 3 times during spawning and post-spawning season: on August 23<sup>rd</sup>, August 27<sup>th</sup> and September 16<sup>th</sup>. No adult salmon were observed. Some water flowed around the east side of the beaver dam, so adult passage would have been possible, though difficult. No attempt was made to survey the meandering mucky sections upstream of the beaver dam, as this area is very difficult to walk and it would be difficult to observe salmon even if they were present. One coded wire tagged (clipped) male chinook was caught on August 22<sup>nd</sup> at the Takhini River. This was the only clipped fish observed among the 53 Takhini chinook that were handled during broodstock collection. 195 adult salmon were counted between the holding pens (downstream of the Kusawa Lake Road) and the Alaska Highway bridge was conducted when the boat was removed from the river on August 28<sup>th</sup>. No carcasses were observed.

The McIntyre project crews did not walk Tatchun Creek for enumeration purposes in 2003, as Little Salmon Carmacks First Nation employees were conducting the salmon counts. Within the broodstock collection area, salmon density was high enough that crews had to walk very carefully to avoid redds at the end of August. One spaghetti tag was retrieved for STAD during broodstock collection.

Flesh samples for DNA analysis and heart samples for ichthyophonous analysis for were taken during broodstock collection at both sites. They were submitted to DFO Stock Assessment.

Posters were again given to DFO personnel for posting at Tatchun and in Dawson in June 2003, offering draw prizes for the submission of Coded wire tagged salmon heads. They were also emailed to Alaska Department of Fish and Game personnel. No heads were submitted.

### **Upcoming Season:**

- Student responsibilities at the McIntyre site will continue to develop. A student manager in the upcoming year will ensure that students commit the required amount of time to picking eggs at the appropriate time. This should reduce losses due to fungus. Students will also take amore active role in preparation of project data, reports, proposals, and budgets. More involvement of students in the egg take will be arranged through incorporation of part of the task into the Renewable

Resources pre academic year field trip. Personnel options for the Takhini egg take will also be examined.

- More copies of a coded wire tag recovery poster will be circulated early in the season in an attempt to recover more tags from the Yukon River Fishery.
- Depending on the results seen by the otolith lab when the thermal marking trial mark is analysed, the thermal marking may be tried again. If results indicate the need, new thermostats may be installed to afford better control over temperature fluctuations. The potential for releasing fry with marks other than coded wire tags will be explored further.
- Fry trapping to assess the condition of released fry will continue. Students and community groups will be encouraged to participate in this task. But they will be asked to electronically submit data from fry trapping immediately after the event, to avoid loss of data.
- Fertilisation of eggs will be performed at the McIntyre site rather than in the field. Low fertilization rates seen in the trial batches of field fertilized eggs in 2003 indicated that incubation site fertilisation is a preferable technique.
- The McIntyre project will continue to welcome other group participation, and school visits, and will once again host an open house.
- Students will collect water samples and ship them for analysis during the rearing period in late June. Student analysis of water samples in the upcoming academic year will be encouraged, although analysis will, at least initially, be done concurrently by an independent lab to verify results.

**Appendices attached:**

- I.** McIntyre Chinook Fry Sampling 2003
- J.** McIntyre CWT 2003
- K.** Takhini River Chinook Egg Take 2003
- L.** Tatchun Creek Chinook Egg Take 2003
- M.** Takhini Chinook Eggs Survival 2003
- N.** Tatchun Chinook Eggs Survival 2003
- O.** Flat Creek Fry Trapping 2003
- P.** Financial Summary March 2004  
McIntyre Site Map



New McIntyre Sign

## Appendix A: McIntyre Project Chinook Fry Sampling 2004

### Appendix A: McIntyre Project Chinook Fry Sampling 2004

**Takhini Fry**

Trough 1

	7-Apr-04		
	length	weight	k
	(in mm)	(in grams)	
#1	37	0.2	0.39
#2	37		
#3	34		
#4	36	0.3	0.64
#5	36	0.3	0.64
#6	37		
#7	36	0.2	0.43
#8	35	0.2	0.47
#9	36	0.3	0.64
#10	38	0.2	0.36

Average: 

<b>36.2</b>	<b>0.24</b>	<b>0.51</b>
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**Takhini Fry**

Trough 1

	16-Apr-04		
	length	weight	k
	(in mm)	(in grams)	
#1	38	0.4	0.73
#2	35	0.2	0.47
#3	33	0.2	0.56
#4	32	0.3	0.92
#5	36	0.4	0.86
#6	36	0.3	0.64
#7	36	0.3	0.64
#8	35	0.3	0.70
#9	38	0.3	0.55
#10	36	0.3	0.64

Average: 

<b>35.5</b>	<b>0.3</b>	<b>0.67</b>
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**Takhini Fry**

Trough 1

	28-Apr-04		
	length	weight	k
	(in mm)	(in grams)	
#1	36	0.3	0.64
#2	37	0.4	0.79
#3	32	0.2	0.61
#4	36	0.3	0.64
#5	37	0.3	0.59
#6	35	0.3	0.70
#7	36	0.3	0.64
#8	33	0.3	0.83
#9	35	0.3	0.70
#10	37	0.4	0.79

Average: 

<b>35.4</b>	<b>0.31</b>	<b>0.69</b>
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**Takhini Fry**

Trough 1

	5-May-04		
	length	weight	k
	(in mm)	(in grams)	
#1	35	0.3	0.70
#2	34	0.4	1.02
#3	38	0.5	0.91
#4	34	0.3	0.76
#5	38	0.4	0.73
#6	36	0.3	0.64
#7	36	0.3	0.64
#8	35	0.3	0.70
#9	35	0.6	1.40
#10	36	0.3	0.64

Average: 

<b>35.7</b>	<b>0.37</b>	<b>0.81</b>
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**Takhini Fry**

Trough 1

	14-May-04		
	length	weight	k
	(in mm)	(in grams)	
#1	37	0.3	0.59
#2	37	0.3	0.59
#3	37	0.3	0.59
#4	35	0.3	0.70
#5	35	0.2	0.47
#6	35	0.3	0.70
#7	37	0.2	0.39
#8	36	0.2	0.43
#9	36	0.3	0.64
#10	37	0.4	0.79

Average: 

<b>36.2</b>	<b>0.28</b>	<b>0.59</b>
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## Appendix A: McIntyre Project Chinook Fry Sampling 2004

### Takhini Fry

Trough 1		7-Jun-04	
length (in mm)	weight (in grams)	k	
#1	36	0.4	0.86
#2	44	0.7	0.82
#3	46	0.3	0.31
#4	38	0.3	0.55
#5	38	0.3	0.55
#6	45	0.7	0.77
#7	37	0.4	0.79
#8	37	0.4	0.79
#9	34	0.3	0.76
#10	44	0.7	0.82
#11	39	0.4	0.67
#12	38	0.4	0.73
#13	37	0.4	0.79
#14	37	0.4	0.79
#15	45	1	1.10
#16	36	0.3	0.64
#17	35	0.2	0.47
#18	40	0.5	0.78
#19	35	0.3	0.70
#20	39	0.5	0.84
Average:	<b>39</b>	<b>0.45</b>	<b>0.73</b>

### Takhini Fry

Trough 2		7-Jun-04	
length (in mm)	weight (in grams)	k	
#1	41	0.6	0.87
#2	36	0.1	0.21
#3	36	0.1	0.21
#4	37	0.2	0.39
#5	41	0.4	0.58
#6	46	0.7	0.72
#7	37	0.1	0.20
#8	35	0.2	0.47
#9	36	0.2	0.43
#10	37	0.1	0.20
#11	43	0.6	0.75
#12	33	0.1	0.28
#13	44	0.7	0.82
#14	36	0.3	0.64
#15	38	0.4	0.73
#16	48	1.1	0.99
#17	45	0.8	0.88
#18	35	0.1	0.23
#19	42	0.7	0.94
#20	36	0.1	0.21
Average:	<b>39.1</b>	<b>0.38</b>	<b>0.54</b>

### Takhini Fry

Trough 1		13-Jun-04	
length (in mm)	weight (in grams)	k	
#1	43	0.7	0.88
#2	46	0.9	0.92
#3	37	0.3	0.59
#4	39	0.5	0.84
#5	39	0.5	0.84
#6	37	0.3	0.59
#7	35	0.1	0.23
#8	45	0.8	0.88
#9	43	0.8	1.01
#10	50	1.3	1.04
#11	44	0.5	0.59
#12	42	0.5	0.67
#13	43	0.6	0.75
#14	41	0.6	0.87
#15	45	0.7	0.77
#16	45	0.8	0.88
#17	43	0.7	0.88
#18	49	1	0.85
#19	52	1.4	1.00
#20	46	0.8	0.82
Average:	<b>43.2</b>	<b>0.69</b>	<b>0.80</b>

### Takhini Fry

Trough 2		13-Jun-04	
length (in mm)	weight (in grams)	k	
#1	36	0.3	0.64
#2	45	0.8	0.88
#3	37	0.4	0.79
#4	38	0.4	0.73
#5	50	1.1	0.88
#6	35	0.4	0.93
#7	46	0.9	0.92
#8	39	0.5	0.84
#9	39	0.5	0.84
#10	42	0.7	0.94
#11	42	0.7	0.94
#12	40	0.6	0.94
#13	39	0.5	0.84
#14	47	1	0.96
#15	45	0.7	0.77
#16	40	0.5	0.78
#17	45	0.8	0.88
#18	45	0.8	0.88
#19	44	0.8	0.94
#20	41	0.6	0.87
Average:	<b>41.75</b>	<b>0.65</b>	<b>0.86</b>



## Appendix A: McIntyre Project Chinook Fry Sampling 2004

### Takhini Fry

Trough 1

21-Jun-04

	length (in mm)	weight (in grams)	k
#1	49	1.2	1.02
#2	45	0.9	0.99
#3	41	0.9	1.31
#4	49	1.1	0.93
#5	50	1.2	0.96
#6	50	1.2	0.96
#7	39	0.5	0.84
#8	48	1.1	0.99
#9	47	1.1	1.06
#10	38	0.5	0.91
#11	45	0.9	0.99
#12	39	0.5	0.84
#13	42	0.6	0.81
#14	45	0.7	0.77
#15	52	1.4	1.00
#16	45	0.8	0.88
#17	50	1.3	1.04
#18	48	0.7	0.63
#19	51	1.1	0.83
#20	40	0.5	0.78

Average: **45.65    0.91    0.93**

### Takhini Fry

Trough 2

21-Jun-04

	length (in mm)	weight (in grams)	k
#1	38	0.4	0.73
#2	38	0.9	1.64
#3	43	0.5	0.63
#4	33	0.2	0.56
#5	39	0.5	0.84
#6	39	0.4	0.67
#7	38	0.4	0.73
#8	36	0.4	0.86
#9	38	0.5	0.91
#10	41	0.2	0.29
#11	40	0.6	0.94
#12	37	0.4	0.79
#13	46	0.9	0.92
#14	38	0.5	0.91
#15	41	0.6	0.87
#16	35	0.2	0.47
#17	39	0.8	1.35
#18	49	1	0.85
#19	41	0.6	0.87
#20	38	0.4	0.73

Average: **39.35    0.52    0.83**

### Takhini Fry

One trough

22-Jul-04

	length (in mm)
#1	48
#2	46
#3	44
#4	45
#5	47
#6	45
#7	46
#8	47
#9	47
#10	44

Average: **45.9**

### Takhini Fry

One trough

3-Aug-04

	length (in mm)	weight (in grams)	k
#1	50	1.2	0.96
#2	45	0.8	0.88
#3	48	1.1	0.99
#4	47	1	0.96
#5	49	1.1	0.93
#6	47	1	0.96
#7	47	1	0.96
#8	52	1.3	0.92
#9	45	0.8	0.88
#10	53	1.6	1.07

Average: **48.3    1.09    1.0**

### Takhini Fry

(code shared Tatchun)

release at Takhini  
21-Aug-04

	length (mm)
#1	47
#2	49
#3	50
#4	49
#5	50
#6	51
#7	51
#8	50
#9	51
#10	51

Average: **49.9**  
 (same code as some Tatchun)

### Takhini Fry

release at Takhini

...08 code 21-Aug-04

	length (mm)	weight (grams)	k
#1	49	1.1	0.93
#2	49	1.1	0.93
#3	47	1.1	1.06
#4	48	1	0.90
#5	51	1.1	0.83
#6	48	1	0.90
#7	47	1.1	1.06
#8	51	1.4	1.06
#9	51	1.2	0.90
#10	46	0.9	0.92
#11	44	1	1.17

Average: **48.3    1.09    0.97**

## Appendix A: McIntyre Project Chinook Fry Sampling 2004

### Tatchun Fry

NOT thermal marked 7-Apr-04

	length (in mm)	weight (in grams)	k
#1	38	0.3	0.55
#2	36	0.2	0.43
#3	35	0.3	0.70
#4	36	0.4	0.86
#5	36	0.3	0.64
#6	36	0.4	0.86
#7	36	0.3	0.64
#8	36	0.4	0.86
#9	38	0.3	0.55
#10	36	0.3	0.64

Average: 36.3    0.32    0.67

### Tatchun Fry

THERMAL marked 7-Apr-04

	length (in mm)	weight (in grams)	k
#1	36		
#2	35		
#3	36		
#4	36	0.4	0.86
#5	37	0.3	0.59
#6	37	0.3	0.59
#7	37	0.4	0.79
#8	37	0.4	0.79
#9	36	0.4	0.86
#10	37	0.3	0.59

Average: 36.4    0.35714286    0.72

### Tatchun Fry

NOT thermal marked 16-Apr-04

	length (in mm)	weight (in grams)	k
#1	37	0.4	0.79
#2	37	0.3	0.59
#3	36	0.3	0.64
#4	37	0.3	0.59
#5	37	0.3	0.59
#6	38	0.4	0.73
#7	38	0.4	0.73
#8	36	0.3	0.64
#9	38	0.3	0.55
#10	38	0.3	0.55

Average: 37.2    0.33    0.64

### Tatchun Fry

THERMAL marked 16-Apr-04

	length (in mm)	weight (in grams)	k
#1	36	0.3	0.64
#2	34	0.4	1.02
#3	36	0.3	0.64
#4	35	0.3	0.70
#5	36	0.3	0.64
#6	37	0.4	0.79
#7	37	0.3	0.59
#8	36	0.3	0.64
#9	38	0.4	0.73
#10	35	0.3	0.70

Average: 36    0.33    0.71000624

### Tatchun Fry

NOT thermal marked 28-Apr-04

	length (in mm)	weight (in grams)	k
#1	37	0.3	0.59
#2	36	0.3	0.64
#3	36	0.3	0.64
#4	38	0.4	0.73
#5	37	0.4	0.79
#6	37	0.4	0.79
#7	36	0.3	0.64
#8	36	0.3	0.64
#9	37	0.3	0.59
#10	37	0.3	0.59

Average: 36.7    0.33    0.67

### Tatchun Fry

THERMAL marked 28-Apr-04

	length (in mm)	weight (in grams)	k
#1	36	0.3	0.64
#2	36	0.3	0.64
#3	37	0.3	0.59
#4	38	0.3	0.55
#5	35	0.3	0.70
#6	37	0.4	0.79
#7	36	0.3	0.64
#8	37	0.3	0.59
#9	36	0.3	0.64
#10	36	0.3	0.64

Average: 36.4    0.31    0.64

## Appendix A: McIntyre Project Chinook Fry Sampling 2004

### Tatchun Fry

NOT thermal marked		5-May-04	
length (in mm)	weight (in grams)	k	
#1	37	0.4	0.79
#2	36	0.3	0.64
#3	37	0.3	0.59
#4	35	0.4	0.93
#5	37	0.3	0.59
#6	37	0.4	0.79
#7	38	0.4	0.73
#8	36	0.3	0.64
#9	35	0.3	0.70
#10	36	0.3	0.64
Average:	<b>36.4</b>	<b>0.34</b>	<b>0.71</b>

### Tatchun Fry

THERMAL marked		5-May-04	
length (in mm)	weight (in grams)	k	
#1	37	0.3	0.59
#2	38	0.2	0.36
#3	36	0.3	0.64
#4	38	0.3	0.55
#5	36	0.3	0.64
#6	37	0.3	0.59
#7	36	0.3	0.64
#8	38	0.3	0.55
#9	37	0.3	0.59
#10	37	0.4	0.79
Average:	<b>37</b>	<b>0.3</b>	<b>0.60</b>

### Tatchun Fry

NOT thermal marked		14-May-04	
length (in mm)	weight (in grams)	k	
#1	37	0.3	0.59
#2	39	0.4	0.67
#3	36	0.3	0.64
#4	38	0.3	0.55
#5	39	0.4	0.67
#6	36	0.3	0.64
#7	37	0.3	0.59
#8	39	0.4	0.67
#9	39	0.6	1.01
#10	36	0.3	0.64
Average:	<b>37.6</b>	<b>0.36</b>	<b>0.67</b>

### Tatchun Fry

THERMAL marked		14-May-04	
length (in mm)	weight (in grams)	k	
#1	44	0.7	0.82
#2	43	0.8	1.01
#3	36	0.3	0.64
#4	35	0.3	0.70
#5	38	0.4	0.73
#6	41	0.3	0.44
#7	38	0.3	0.55
#8	38	0.4	0.73
#9	38	0.6	1.09
#10	40	0.3	0.47
Average:	<b>39.1</b>	<b>0.44</b>	<b>0.72</b>

### Tatchun Fry

NOT thermal marked		7-Jun-04	
length (in mm)	weight (in grams)	k	
#1	37	0.3	0.59
#2	42	0.4	0.54
#3	37	0.4	0.79
#4	38	0.4	0.73
#5	38	0.4	0.73
#6	48	1	0.90
#7	42	0.7	0.94
#8	45	0.8	0.88
#9	38	0.5	0.91
#10	37	0.4	0.79
#11	39	0.5	0.84
#12	38	0.4	0.73
#13	36	0.4	0.86
#14	43	0.7	0.88
#15	43	0.6	0.75
#16	44	0.7	0.82
#17	38	0.4	0.73
#18	38	0.4	0.73
#19	43	0.7	0.88
#20	36	0.4	0.86
Average:	<b>40</b>	<b>0.525</b>	<b>0.79</b>

### Tatchun Fry

THERMAL marked		7-Jun-04	
length (in mm)	weight (in grams)	k	
#1	44	1	1.17
#2	42	0.7	0.94
#3	40	0.6	0.94
#4	37	0.4	0.79
#5	37	0.3	0.59
#6	42	0.9	1.21
#7	38	0.4	0.73
#8	48	1.2	1.09
#9	50	1.2	0.96
#10	42	0.6	0.81
#11	47	0.9	0.87
#12	47	1.2	1.16
#13	48	1	0.90
#14	46	0.9	0.92
#15	36	0.4	0.86
#16	36	0.3	0.64
#17	50	1.1	0.88
#18	43	0.6	0.75
#19	45	0.8	0.88
#20	40	0.5	0.78
Average:	<b>42.9</b>	<b>0.75</b>	<b>0.89</b>

## Appendix A: McIntyre Project Chinook Fry Sampling 2004

### Tatchun Fry

	13-Jun-04		
	length (in mm)	weight (in grams)	k
#1	37	0.3	0.59
#2	42	0.4	0.54
#3	37	0.4	0.79
#4	38	0.4	0.73
#5	38	0.4	0.73
#6	48	1	0.90
#7	42	0.7	0.94
#8	45	0.8	0.88
#9	38	0.5	0.91
#10	37	0.4	0.79
#11	39	0.5	0.84
#12	38	0.4	0.73
#13	36	0.4	0.86
#14	43	0.7	0.88
#15	43	0.6	0.75
#16	44	0.7	0.82
#17	38	0.4	0.73
#18	38	0.4	0.73
#19	43	0.7	0.88
#20	36	0.4	0.86

Average: **40    0.525    0.79**

### Tatchun Fry

	13-Jun-04		
	length (in mm)	weight (in grams)	k
#1	47	0.8	0.77
#2	45	0.9	0.99
#3	42	0.6	0.81
#4	42	0.6	0.81
#5	37	0.3	0.59
#6	48	0.8	0.72
#7	47	1.3	1.25
#8	47	1.2	1.16
#9	46	1.3	1.34
#10	52	1.4	1.00
#11	39	0.4	0.67
#12	47	1.2	1.16
#13	48	1.3	1.18
#14	40	0.6	0.94
#15	47	0.8	0.77
#16	48	1.1	0.99
#17	39	0.4	0.67
#18	46	0.9	0.92
#19	41	0.7	1.02
#20	46	1	1.03

Average: **44.7    0.88    0.94**

### Tatchun Fry

	21-Jun-04		
	length (in mm)	weight (in grams)	k
#1	37	0.4	0.79
#2	40	0.5	0.78
#3	39	0.3	0.51
#4	40	0.5	0.78
#5	40	1.1	1.72
#6	45	0.7	0.77
#7	49	1	0.85
#8	55	1.3	0.78
#9	35	0.3	0.70
#10	38	0.4	0.73
#11	38	0.4	0.73
#12	38	0.5	0.91
#13	47	0.8	0.77
#14	51	1.3	0.98
#15	36	0.3	0.64
#16	41	0.6	0.87
#17	41	0.5	0.73
#18	50	1.2	0.96
#19	40	0.6	0.94
#20	48	0.7	0.63

Average: **42.4    0.67    0.83**

### Tatchun Fry

	21-Jun-04		
	length (in mm)	weight (in grams)	k
#1	41	0.9	1.31
#2	40	0.5	0.78
#3	38	0.4	0.73
#4	54	1.6	1.02
#5	49	1.1	0.93
#6	41	0.6	0.87
#7	41	0.9	1.31
#8	52	1.3	0.92
#9	49	1.1	0.93
#10	50	1.3	1.04
#11	46	1	1.03
#12	50	1.3	1.04
#13	48	1	0.90
#14	49	1.2	1.02
#15	50	1.2	0.96
#16	47	1	0.96
#17	47	1	0.96
#18	47	0.6	0.58
#19	49	1	0.85
#20	54	1.7	1.08

Average: **47.1    1.035    0.96**

**Appendix A: McIntyre Project Chinook Fry Sampling 2004**

**Tatchun Fry**  
**NOT thermal marked**      **June 27. 04**

	length (in mm)
#1	49
#2	50
#3	46
#4	46
#5	48
#6	45
#7	46
#8	47
#9	50
#10	46
#11	47
#12	47
#13	47
#14	47
#15	49
#16	47
#17	45
#18	43
#19	50
#20	48
#21	53
#22	50
#23	47
#24	47
#25	50
Average:	<b>47.6</b>

**Tatchun Fry**  
**THERMAL marked**      **June 27. 04**

	length (in mm)	weight (in grams)	k
#1	51	1.2	0.90
#2	49		
#3	47		
#4	50	1.2	0.96
#5	48	1.3	1.18
#6	50		
#7	52	1.3	0.92
#8	52	1.4	1.00
#9	51	1.5	1.13
#10	46	0.9	0.92
#11	46	0.9	0.92
#12	48	1	0.90
#13	48	1	0.90
#14	41	0.6	0.87
#15	47		
#16	45		
#17	47	1.1	1.06
#18	53	1.3	0.87
#19	49	1	0.85
#20	46		
#21	46		
#22	48		
#23	51		
#24	49		
#25	51	1.4	1.06
#26	47	0.9	0.87
#27	47	1.1	1.06
#28	43	0.7	0.88
#29	46	0.8	0.82
#30	51	1.3	0.98
#31	45		
#32	40		
#33	42		
Average:	<b>47.6</b>	<b>1.10</b>	<b>0.95</b>

**Appendix A: McIntyre Project Chinook Fry Sampling 2004**

**Tatchun Fry**  
**NOT thermal marked**      **22-Jul-04**

	length (in mm)
#1	45
#2	47
#3	44
#4	45
#5	45
#6	51
#7	51
#8	45
#9	45
#10	47
Average:	<b>46.5</b>

**Tatchun Fry**  
**THERMAL marked**      **22-Jul-04**

	length (in mm)
#1	48
#2	46
#3	45
#4	47
#5	49
#6	47
#7	43
#8	44
#9	45
#10	48
Average:	<b>46.2</b>

**Tatchun Fry**  
**NOT thermal marked**      **3-Aug-04**

	length (in mm)	weight (in grams)	k
#1	50	1.3	1.04
#2	52	1.3	0.92
#3	50	1.3	1.04
#4	46	0.9	0.92
#5	49	1.1	0.93
#6	52	1.5	1.07
#7	50	1.3	1.04
#8	50	1.2	0.96
#9	50	1.2	0.96
#10	49	1.2	1.02
Average:	<b>49.8</b>	<b>1.2</b>	<b>1.0</b>

**Tatchun Fry**  
**THERMAL marked**      **3-Aug-04**

	length (in mm)	weight (in grams)	k
#1	50	1.1	0.88
#2	48	1.1	0.99
#3	51	1.4	1.06
#4	50	1.4	1.12
#5	52	1.4	1.00
#6	46	1.1	1.13
#7	45	1	1.10
#8	55	1.8	1.08
#9	53	1.6	1.07
#10	52	1.7	1.21
Average:	<b>50.2</b>	<b>1.4</b>	<b>1.1</b>

**Tatchun Fry**  
**NOT thermal marked**      **Aug 20 2004 release**

	length (in mm)
#1	48
#2	52
#3	52
#4	45
#5	51
#6	53
#7	52
#8	55
#9	50
#10	51
Average:	<b>50.5</b>

**Tatchun Fry**  
**THERMAL marked**      **Aug 20 2004 release**

	length (in mm)
#1	45
#2	53
#3	55
#4	56
#5	56
#6	55
#7	54
#8	59
#9	57
#10	52
Average:	<b>53.2</b>

**McIntyre CWT 2003**

<b>TATCHUN</b>		Tagging 2003 (Broodstock 20012)																								
DATE	TAG CODE	STOCK	hours	notes	MORTS	DAILY TOTAL	REJ	ACCUM	code	all codes	SMALL	DAILY	# SAMPLED	TOTAL RELEASE	TAGGED	ADIPOSE	UNTAGGED									
								TOTAL				RETENTION	FOR RETENTION	marked	RELEASE	CLIP ONLY	RELEASE									
23-Jun-03				setup																						
24-Jun	0201010714	TATCHUN	4	1/2 setup, 1	6	2206		2206	2206	0	100			2200	2200	2200	0									
25-Jun			8	tagging train	3	2750		4956	4956	0	99			2769.06	2769.06	2719.5	49.56	0	TAGGED	ADIPOSE	UNTAGGED					
26-Jun			8		6	4012		8968	8968	27	100			4033	4006	4006	0	27	RELEASE	CLIP ONLY	RELEASE	TOTAL RELEASE				
27-Jun			7	1/2 day tosc	6	1836		10804	10804	57	100			1887	1830	1830	0	57								
																<b>10755.5</b>	<b>49.56</b>	<b>84</b>	<b>10889.06</b>							
30-Jun	201010715	TATCHUN	8			3557		3557	14361	58	100			3615	3557	3557	0	58	-10		-5	<b>-15</b>				
2-Jul			8		6	4025		7582	18386	55	100			4074	4019	4019	0	55								
3-Jul			11			5700		13282	24086	58	100			5758	5700	5700	0	58								
																<b>13276</b>	<b>0</b>	<b>171</b>	<b>13447</b>							
														<b>24336.06</b>	<b>24081.06</b>	<b>24031.5</b>	<b>49.56</b>	<b>255</b>	<b>-15</b>	<b>-5</b>	<b>-20</b>					
												<b>post tagging morts:</b>				<b>25</b>	<b>10</b>									
												<b>TOTAL TATCHUN RELEASE:</b>		<b>24301.06</b>	<b>24056.06</b>	<b>24006.5</b>	<b>49.56</b>	<b>245</b>	24006.5	49.56	245	24301.06				
												<b>post tagging morts adj:</b>														



TAKHINI		Tagging 2003 (Broodstock 2002)					Tatchun fish released July 4th 2003 @ 1.4 grams and 52 mm.											
DATE	TAG CODE	STOCK	hours	note	MORTS	DAILY TOTAL (excl smalls)	REJ	code ACCUM TOTAL	all codes ACCUM TOTAL	SMALL	DAILY RETENTION	# SAMPLED FOR RETEN	total for code	TOTAL RELEASE all	TAGGED RELEASE	ADIPOSE CLIP ONLY	UNTAGGED RELEASE	
4-Jul	211223141	TAKHINI	7.5	machine	3	1527		1527	1527	3	100			1530	1527	1527	0	3
7-Jul			8		0	2905		4432	4432	39	100			2944	2905	2905	0	39
8-Jul			7		0	4014		8446	8446	23	100			4037	4014	4014	0	23
<b>TAKHINI RELEASE</b>																		
												<b>post tagging morts</b>						
												<b>post tagging morts adj</b>		8486	8431	8431	0	55
10-Jul-03	211223142	TAKHINI	4.5		5	2551		2551	10997	11	100			2562	2551	2551	0	11
10-Jul-03			3.5		3	1840		4391	12837	16	100			1856	1840	1840	0	16
11-Jul-03			7		0	4031		8422	16868	19	100			4050	4031	4031	0	19
14-Jul-03			7.5		0	5610		14032	22478	40	100			5650	5610	5610	0	40
<b>TAKHINI RELEASE</b>																		
												<b>post tagging morts</b>						
												<b>post tagging morts adj</b>		14093	14017	14017	0	76
15-Jul-03	211213846	TAKHINI	8		27	5192		5192	27670	57	99			5249	5192	5140.08	51.92	57
16-Jul-03			3		0	1319		6511	28989	22	99			1341	1319	1305.81	13.19	22
<b>FLAT CREEK RELEASE</b>																		
<b>Flat Creek fish released on July 22 2003@ 1.7 grams and 55.5 mm</b>												<b>post tagging morts</b>						
												<b>smalls removed to Takhini R. batch</b>						79*
												<b>post tagging morts adj</b>		6491	6491	6425.89	65.11	0
16-Jul-03	201010701	Takhini	5		0	1342		1342	30331	50	99			1392	1342	1328.58	13.42	50
17-Jul-03			7.5		0	4428		5770	34759	17	100			4445	4428	4428	0	17
18-Jul-03			4		0	1904		7674	36663	15	100			1919	1904	1904	0	15
20-Jul			4		0	2246		9920	38909	22	100			2268	2246	2246	0	22
21-Jul			4		0	1682		11602	40591		100			1682	1682	1682	0	0
<b>TAKHINI RELEASE</b>																		
												<b>post tagging morts adj</b>						
												<b>Flat Creek code smalls added:</b>						79*
<b>Takhini fish released on July 21 2003 @ 1.7 grams and 55.5 mm</b>												<b>post tagging morts adj</b>		11731	11568	11554.58	13.42	163
<b>TOTAL RELEASE TO TAKHINI RIVER:</b>														34310	34016	34002.58	13.42	294
<b>TOTAL RELEASE OF TAKHINI RIVER FRY:</b>														40801	40507	40428.47	78.53	294

**Appendix C:**

**TAKHINI RIVER CHINOOK EGG TAKE 2003**

**AUGUST 18TH**

Trix and Ken take boat to Takhini.  
7 males caught and kept-> took milt and then marked and released 5  
3 females caught: kept all:took eggs from 2 2E

**AUGUST 20TH**

Trix and Pete and Gerald  
13 males caught: 4 marked and released;9 held->took milt and mark/rel 7  
3 females caught: 2 ripe; 1 mainly spent 3E

**AUGUST 22ND**

Trix and Rick and Gerald  
16 males caught: 2 recaps released; 8 kept (1 CWT); 6 marked and released  
7 females caught: 1 part spawn 4E

**AUGUST 24TH**

Trix and Pat  
Sign of two bears around pens:1 unripe female dead in pen-badly scaled.  
2 ripe females looked badly scaled in pens.  
1 ripe female was okay.  
Took eggs from 3 females in pens and 1 more that was caught.  
Used milt from 10 males.  
8 males caught: 3 recaps released; 3 marked and released; 2 kept and used  
1 female caught and kept 4E  
1 mort

**TAKHINI AUG 28<sup>TH</sup>**

Trix and Ken boat downstream to the Takhini River Bridge (Alaska Highway) to  
remove boat.  
Observed 195 live salmon and no carcasses en route.

**Takhini Egg Take 2003**

Total Number of fish handled:	39 males
	<u>14 females</u>
Observed 1 clipped fish	
in total of:	<u><u>53 chinook</u></u>

## **Appendix D: TATCHUN CREEK CHINOOK EGG TAKE 2003**

### Around AUGUST 7<sup>th</sup>

Carmacks crew walked Tatchun and didn't see any salmon.

### AUGUST 14<sup>TH</sup>

Trix and Raquel put in holding tubes and net.

Water 16 degrees C. Low water- about 15 cm lower at slide holding area than in previous years.

Few fish holding at slide.

Observed about 80 fish between slide and holding site 300m upstream (left channel)

Netted 15 fish: 2 hard females and 13 males. Released all.

### AUGUST 17<sup>TH</sup>

Trix and Scott.

Took eggs from **one** mainly-spent female: kept eggs although they looked mainly water-hardened.

Other females netted were hard.

Dead female examined. Blind. Died unspent

Fish starting to pair up; most still in pools.

Seemed to be a high percentage of females.

Saw a silver wolf.

### AUGUST 19<sup>TH</sup>

Trix and Alain.

Took eggs from **one** partly spent female.

Other females caught in net were hard. Held 2 females in tubes.

Many fish in pairs. A few spent females.

### AUGUST 21<sup>ST</sup>

Trix and Bob and Jim.

Snagged fish from spawning sites.

Checked 2 females mainly spent.(discarded eggs as the few eggs left had much water hardening).

Took eggs from **1** full ripe female.

Held 2 hard females. Took eggs from **1** female from tubes.

Tried field fertilization on half of eggs from **2** more females, using egg tubes

One spaghetti tag found on small male-gave to STAD

Used milt from 10 males

Fish moving out of pool, perhaps half on redds

### AUGUST 23<sup>RD</sup>

Trix and Doug

Snagged fish from redds and pool

Took eggs from **5** salmon (2 from holding tubes- 3 snagged ripe) Held 2 more.

Used milt from 9 males

About 20 fish left in pool

Most fish left in pool were females

### AUGUST 25<sup>TH</sup>

Trix and Doug.

Took eggs from **1** female- released others.

Took milt from 3 males.

Removed tubes.

Few fish left in pool. Many spent fish. Many partly consumed carcasses.

Females were dying on redds. Redds everywhere! Had to tread very carefully.

**Chinook Egg Survival**

**Takhini 2003**

Date	Female #	Total Egg vol. mL	# Eggs in measured volume	Volume of counted eggs (mL)	Calculated # eggs	Incubator egg tray	% Fert. of sample	# Eggs in fert. check sample	Estimated total # of fertile eggs	Est. # eggs picked	Est. # eggs remaining	Est. % survival of green eggs
18-Aug	1	1220	160	40	4880	A1	90	10	4392	3322	1558	32
	2	1850	157	40	7261	A2	80	10	5809	2126	5135	71
20-Aug	3	225	149	40	838	B4	80	10	671	37	801	96
	4	2220	177	40	9824	A3	90	10	4421	1366	3546	72
22-Aug	5	1830	161	40	7366	B2	100	10	4421	1576	3336	68
						A4		10	7366	6592	774	11
	6	2170	146	40	7921	F1	used avg. fertility	10	6864	1994	5927	75
7	1000	143	40	3575	F2	used avg. fertility	10	3098	135	3440	96	
8	2040	145	40	7395	F3	used avg. fertility	10	6409	189	7206	97	
9	1950	134	40	6533	F4	used avg. fertility	10	5662	181	6352	97	
24-Aug	10	1220	180	40	5490	H1	used avg. fertility	10	4758	2805	2685	49
	11	2150	166	40	8923	H2	80	10	3569	1462	2999	67
24-Aug	12	1600	171	40	6840	H2b	used avg. fertility	10	3569	1476	2985	67
						H3		10	5928	555	6285	92
						H4 and H5		10	3590	362	3780	91
13	2350	141	40	8284	split into H4&H5	used avg. fertility	10	3590	320	3822	92	
					<b>85128</b>	Estimated # of fertile eggs:			<b>74115</b>	<b>60630</b>		

(using average fertility for unknown )

Total Egg Take: **85128**

% Fertility average **87**

Estimated # Surviving Fry: **60630**

Overall % survival from green eggs: **71**

Overall % survival from fertilised eggs: **82**

**Chinook Egg Survival**

**Tatchun 2003**

Date	Female #	Total volume of eggs ( in mL.)	Number of eggs in 40 ml	Estimated total # egg take	% Fert. in sample	# Eggs in fert. check sample	Estimated number of fertilised eggs	Notes:	Estimated total # dead eggs removed	Est. # Remaining Surviving eggs	% Survival from green egg
17-Aug	1	mostly water hardened		1000	0		0		1000	0	0
19-Aug	2	920	170	3910	90	10	3519		1370	2540	65
21-Aug	3	discard	N/A								
	4	1300	150	4875	average fertility		4193	<b>*see Note: E</b>	1475	3400	70
	5	1600	150	6000	l. field fertilization		5160		2668	3332	22
	6	850	160	3400	30	10	1020		2307	1093	32
	half field fert	850	160	3400	80	10	2720		<b>482</b>	<b>2918</b>	<b>86</b>
	7	600	160	2400	90	10	2160		<b>328</b>	<b>2072</b>	<b>86</b>
	half field fert	600	160	2400	30	10	720		814	1586	66
23-Aug	8	1700	149	6333	80	10	5066	fert. Unclear	<b>2588</b>	<b>3745</b>	<b>59</b>
	9	1000	160	4000	90	10	3600	<b>*see Note: G</b>	<b>1415</b>	<b>2585</b>	<b>65</b>
	10	1400	154	5390	80	10	4312		<b>3411.6</b>	<b>1978</b>	<b>37</b>
	11	1250	148	4625	90	10	4163		<b>3551</b>	<b>1074</b>	<b>23</b>
	12	1500	156	5850	90	10	5265		<b>1665</b>	<b>4185</b>	<b>72</b>
25-Aug	13	2200	143	3933	80	10	3146		1742	2191	56
		split tray Aug 27		3933	80	10	3146		1676	2257	57

Total Egg Take: **61448**

**48189**

26493 **34955** **57**

Average fertility, including field fertilised and water hardened:	<b>69</b>
Average fertility, excluding field fertilised and water hardened:	<b>86</b>

Overall percent survival from <b>green</b> eggs:	<b>57</b>
Overall percent survival from <b>fertilised</b> eggs:	<b>73</b>

Est. Total # Fry Surviving: **34955**

Estimated # in otolith marked group: **18557**

(Otolith marked eggs in bold above)

**\*Note: E** trays were pooled/divided was not assessed.  
to equalize egg volumes in trays.  
the moist air incubator.  
Survival of individual batches  
One tray of 4990 was put in

**\*Note: G** tray eggs were moved to the moist air incubator and to the G stack afterwards.  
Survival of individual batches was not accurately assessed.

**Appendix F: Tatchun Chinook Eggs Survival 2003**

**Appendix G: Flat Creek Fry Trapping 2003**

Date: Set – Sept. 16 '03, pulled – Sept. 17 '03

Sampler: Jessica Speed, recent Yukon College Ren. Res. Grad

Organization: Northern Research Institute of Yukon College

Project: McIntyre Salmon Incubation Project

Water temperature at bridge: 4 degrees C., clear water to mouth

- Trap # 1 75 m above bridge, under overhanging alder. River right.
- Trap # 2 60 m above bridge, under overhanging alder. River left.
- Trap # 3 35 m above bridge, in broad deep curve. River left.
- Trap # 4 100m below bridge, in deep eddy near debris pile. River left.
- Trap # 5 105m below bridge, in deep eddy near debris pile. River left.
- Trap # 6 120 m below bridge, downstream of rocky bar. River left.
- Trap # 7 Near mouth:10 m upstream of beaver dam, calm spot in shade of spruce trees. River right.
- Trap # 8 50 m downstream of beaver dam. River left.
- Trap # 9 100 m downstream of beaver dam, in deep pool in sight of Takhini R. River left.
- Trap #10 150 m downstream of beaver dam, 20 m upstream of Takhini R, below bowed spruce. River left.

Trap #	Time Set	Time Pulled	Spp	LGTH (mm)	WGHT (gm)	Comments
1	1:15pm	1:00	chinook	68	3.3	clipped adipose
			" "	65	1.7	" "
			" "	67	1.9	" "
			" "	63	1.7	" "
			" "	67	2	" "
			" "	68	2.9	" "
			sculpin	-	-	-
2	1:25pm	1:45pm	Chinook	64	1.5	Clipped adipose
			" "	64	1.9	" "
			" "	68	1.9	" "
3	1:35pm	2:00	Chinook	73	2.9	Clipped adipose
			" "	75	3	" "
			" "	67	1.7	" "
			" "	66	1.8	" "
			" "	66	2.1	" "
			" "	74	3.1	" "
			" "	68	2.2	" "
			" "	64	2.2	" "
			73	2.4	" "	
4	2:00	2:30	Sculpin			
			" "			
			Chinook	75	3.2	HAS Adipose,no dye
			" "	67	1.9	Clipped adipose
			" "	69	2	" "
			" "	69	2.2	" "
			" "	68	1.9	" "
			" "	70	2.5	" "
			" "	64	1.9	" "
			" "	68	1.9	" "
			" "	66	1.7	" "
			" "	65	1.8	" "
5			none			
6	2:10pm	3:05pm	sculpin	-	-	-
			Chinook	67	1.5	Clipped adipose
			" "	64	1.8	" "
			" "	68	2	" "
			" "	65	1.9	" "
7	3:10pm	4:15pm	None	-	-	-
8	3:30	4:20	sculpin	-	-	-
			chub	59		Scale not working
			chinook	79		" "
			" "	88		" "
9	3:40	4:45	unsure	130		no axillary process:perhaps Osmeridae?
			chinook	78		" "
			sucker			
			" "			
10	3:45	5:00	sucker			all small, near 25 mm
			" "			
			" "			
			" "			
			" "			
			" "			

## Financial Summary

McIntyre Creek Fish Hatchery - Salmon Incubation Project - 2003/04

Total Received from Yukon River Panel - Project RE - 65-03 - \$42,900.00

<b>FINANCIAL SUMMARY</b>			
<b>I. PERSONNEL COSTS:</b>			
Tagging, Egg Takes			
Site Monitoring/Feeding/Picking	\$14,256.99		
		<b>\$14,256.99</b>	
<b>II. OPERATING COSTS:</b>			
<b>A. ADMINISTRATION:</b>			
Administration (15%)	\$6,435.00		
		<b>\$6,435.00</b>	
<b>B. TRAVEL</b>			
Mileage - egg takes, fly trapping and carcass surveys, boat fuel, etc.	\$1,134.00		
		<b>\$1,134.00</b>	
<b>C. MATERIALS, SUPPLIES, MAINTENANCE</b>			
Tags, Tagging Equipment	\$5,100.00		
Construction/Plumbing/Electrical/Incubation Supplies	\$11,336.98		
Electricity	\$2,373.49		
Security (phones, monitoring, wiring)	\$2,596.96		
Fish Food - EWOS	\$527.52		
		<b>\$21,934.95</b>	
<b>SUB-TOTAL</b>		<b>\$43,760.94</b>	
<b>TOTAL</b>			<b>\$43,760.94</b>

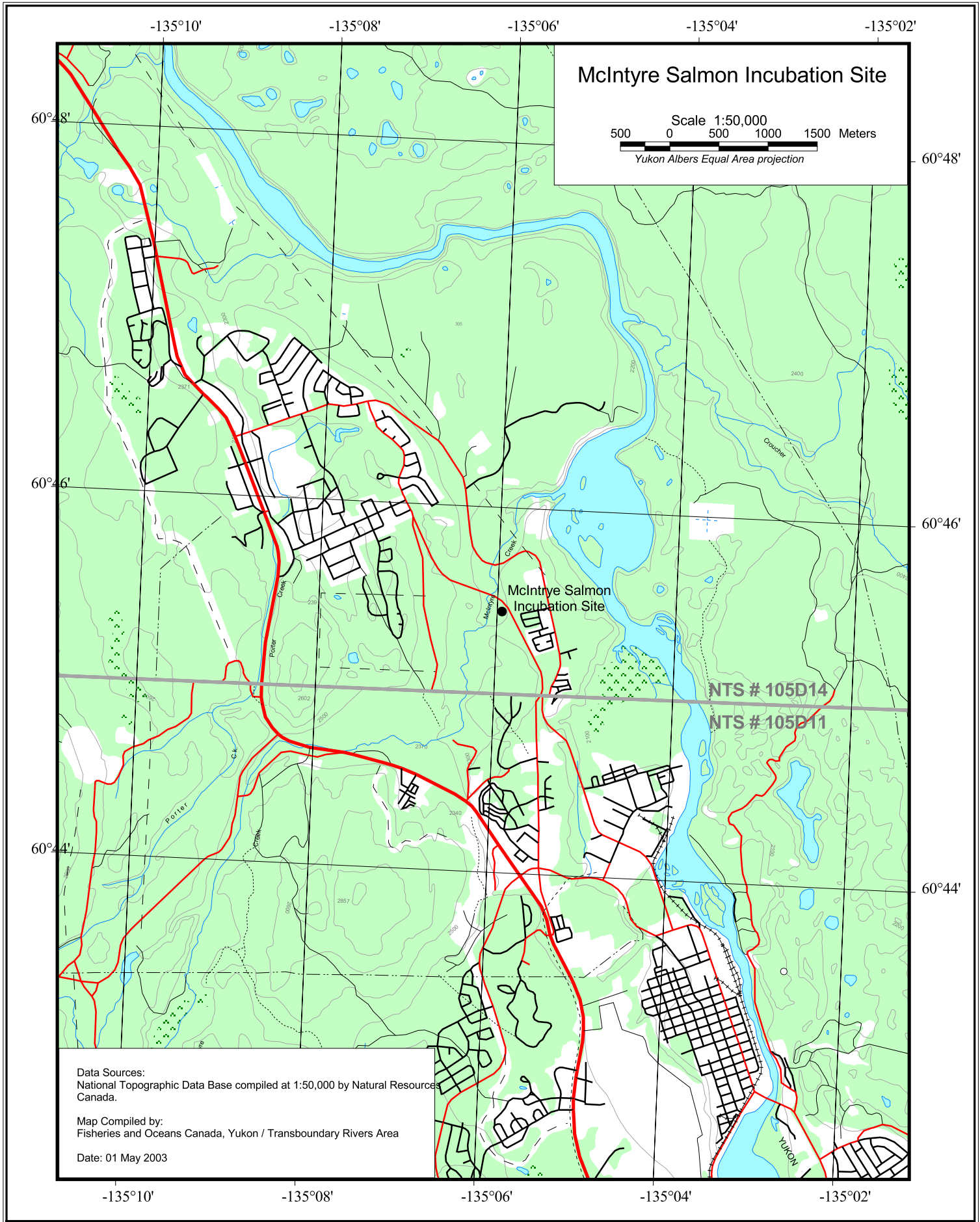
### OTHER SOURCES OF FUNDING, ASSISTANCE, AND/OR INFORMATION:

#### Assistance Details

#### Amount of funding

<b>Northern Research Institute:</b> labour, coordination, finance	\$12000 in kind
<b>Y2C2:</b> fry trapping labour, adult stream survey -5 or 6 person crews for 5 days=25 person days	\$2500 in kind
<b>DFO:</b> technical support and egg take assistance (for school program eggs) egg takes 20 person days	\$4000 in kind
<b>Streamkeepers North Society:</b> equipment loans and Streamkeepers workshop	\$500 in kind





# McIntyre Salmon Incubation Site

Scale 1:50,000  
500 0 500 1000 1500 Meters  
Yukon Albers Equal Area projection

McIntyre Salmon Incubation Site

NTS # 105D14

NTS # 105D11

Data Sources:  
National Topographic Data Base compiled at 1:50,000 by Natural Resources Canada.

Map Compiled by:  
Fisheries and Oceans Canada, Yukon / Transboundary Rivers Area

Date: 01 May 2003