



2009

YUKON RIVER NORTH MAINSTEM STEWARDSHIP

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DDRRC

Yukon River North Mainstem Stewardship

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ABSTRACT

This project aimed to [restore](#) Chinook salmon to rearing habitats and salvage juvenile Chinook from isolated habitats. Planning was conducted in consultation with DFO. Two local high school students were hired and worked in the field under a field supervisor. Both students remained with the project throughout, learned a lot from the season and they performed well. DFO staff provided invaluable technical support to the team. The project started on July 13 and ended on Aug 14, 2009. A total of 1393 juvenile salmon were captured and transported to upstream habitats or from isolated pools to open waters. New areas were investigated. The DDRRC recommends that the project continues by assisting the juvenile Chinook to make it to rearing areas.

INTRODUCTION

In 2006, a pilot project was initiated by the Dawson District Renewable Resources Council in response to concerns by Tr'ondëk Hwëch'in elders and other locals that salmon rearing and spawning habitat has been diminishing within the Tr'ondëk Hwëch'in traditional territory. Further, field investigations by the YFWMB Dawson Area Community Steward and the Department of Fisheries and oceans on several non-spawning streams in the Dawson area indicated that beaver dams and other non-permanent barriers were obstructing the movement of salmon fry into known rearing and overwintering habitat. Field investigations also indicated that significant numbers of fry remained in pools in spawning rivers that became isolated after the spring freshet. This project incorporated the methodology and recommendations of our 2006 to 2008 projects to achieve our 2009 objectives.

The objectives of the project were to:

- Restore Chinook salmon stocks through increasing access to rearing and overwintering habitat
- Involve, educate and give experiences to 2 students from Robert Service School.
- Build community capacity and stewardship for the restoration of salmon stocks and habitat
- To add to knowledge of salmon utilisation of small streams in the central Yukon.
- To salvage salmon fry from isolated pools in the Klondike River floodplain
- Develop a monitoring program for future assessment and restoration

Coordination and communication for this project was provided by the author in her role of Dawson District Renewable Resource Council Executive Secretariat.

METHODS AND RESULTS

The project had three main components. These were:

1. Planning and mobilisation, including the hiring of staff, determination of logistics, etc;
2. Field work stage, during which juvenile salmon were relocated into upstream habitat or salvaged from isolated pools; and
3. Reporting.

Each component will be discussed below.

1. Planning and mobilisation

A project supervisor, Hans Algotsson, was hired in late June, 2009. The three known Chinook rearing habitats that were identified in the proposal were: Clinton and Mickey Creek, tributaries to the Fortymile, and the Germaine Creek area which is an old Klondike River channel at the confluence of Germaine Creek.

A three passenger 4 x 4 vehicle was provided by supervisor Hans Algotsson for the project. The funding that was proposed in our detailed proposal was less than quotes from vehicle rental firms from Whitehorse, so we therefore made this change to stay within budget.

Two local high school students, Hayley Riemer and Luke Hunter were also hired in mid July 2009. Throughout the project, they were encouraged to develop an understanding of the environment in which they live, how salmon are a part of that environment, and how humans can play a role in helping the resource along, and appreciating the role of Mother Nature, by the increased volume of rain.

2. Fieldwork stage: Investigation of sites and Relocation of juvenile Chinook salmon

This component of the project began on the 13 July 2009. During the first week Al von Finster (DFO Restoration Biologist) accompanied the field supervisor and the students to the Klondike and Fortymile watershed sites, and trained the employees in the technique of capturing, anesthetizing and measuring juvenile chinook.

The technique used throughout the project was baited Gee-type minnow traps. These were set in accordance with the “Protocol for the baiting of G-type minnow traps for the capture of juvenile Chinook salmon in the Yukon River drainage basin” (Appendix A). All fish captured were counted, and only juvenile salmon were released above obstructions. Incidental by catches included slimy sculpin, Arctic grayling, and long nosed sucker (Appendix B).

A total of 1393 juvenile chinook salmon were salvaged or released upstream of obstructions. Captures of juvenile Chinook salmon by location and date are shown in Table 1.



Date	Clinton Creek	Mickey Creek	Germaine Creek	North		
				Logjam Intake	Fork Intake	Lousetown Side Channel
July 15-09			77			
July 16-09			136	12		
July 17-09			48	13		
July 20-09			34	5		
July 21-09			44	2	6	
July 22-09			23	1	4	
July 23-09			29		7	
July 24-09			28			
July 28-09	360	2				
July 29-09	144	1				
July 30-09	70	1				
Aug 04-09						11
Aug 05-09						3
Aug 06-09	209					
Aug 07-09	118	5				
Sub total	901	9	419	33	17	14
TOTAL						

Table 1 – Total Chinook juvenile salmon moved in July and Aug 2009

Relocation of Chinook salmon began on July 13th in the Klondike drainage and extended until Aug 14th. A total of 1393 juveniles were captured and released. Relocation of juveniles in the 40 Mile drainage starting on July 17th and was completed August 7th with a total of 90 juvenile relocated upstream of nonpermenant obstructions.

The project began at the Germaine Creek Reclamation salvage site in the Klondike drainage area. A total of 419 juveniles were salvaged from this area in 2009, compared with 8 in 2008 and 1298 in 2007. .

In 2008, an important component of the project was to address concerns that had arisen from Tr'ondëk Hwëch'in elders regarding the handling of juvenile salmon, and the perceived spread of disease through human/fish contact. To this end, the project methodology was modified so that fish were only anesthetized and measured on several training days and in the presence of experienced DFO staff. A small group of Tr'ondëk Hwëch'in members travelled to a very nice spot along the Klondike River, about 2 km south from the Dempster highway, on August 13th to observe the project first hand, including anesthetizing and measuring fish. Invitation to other Tr'ondëk Hwëch'in elders was issued through the Tr'ondëk Hwëch'in elders coordinator, but they were unable to attend.

On August 11th, 2009 the public day took place out at Germaine Creek just out side of Dawson City along the Klondike Highway. An invitation was sent out to the Elders Council and posters were put up in the windows of the DDRRC office. I also sent out an invitation to all employees of Tr'ondëk Hwëch'in. Due to other functions going on in the community at that time only one elder could attend. We had a few very interested children and a couple of adults attend the public day. Al von Finster and the DDRRC crew trapped a few different kinds of fish and showed everyone how to anesthetise, measure and weigh the fish. After the fish woke up the children then got to release the fish back in the water which was very exciting for them to do and see. Over all it was a good turn out and everyone seemed happy. All the feed back was very positive. Tr'inke Zho Daycare would like to bring some children out next year to see the project.



4. Reporting

The final report was completed following the field work component of the project and the September DFO monitoring of Clinton Creek. Creek-specific information was added to the “Draft North Yukon Mainstem Restoration and Enhancement Record of Activities” (Appendix C).



DISCUSSION

Klondike River – Germaine Creek Reclamation area salvage

In the previous year, 8 juvenile Chinook were salvaged from isolated pools in the Germaine Creek area. This year 419 were captured and released from isolated pools.

Clinton Creek

In the previous year, 58 juvenile chinook were captured and restored to upstream habitats. This year 901 salmon were moved. Interference from a black bear that opened many traps reduced the potential numbers. This was both through escapes from the traps and the crew having to cease trapping due to safety concerns. DFO sampled Clinton Creek on September 16 and found juveniles restored to Clinton Creek at the mine site to have grown an average of 8.4 mm in fork length and 1.15 grams in weight between mid August and mid September. The juveniles at the mine site on Sept 16 were 6.1 mm in fork length and 1 gram heavier than juveniles captured at the mouth of Clinton Creek.

Mickey Creek

In the previous year, 32 juvenile salmon were captured and restored to the creek above the Clinton Creek Road Crossing. This year 9 salmon were moved upstream of the culvert.

Viceroy ground water channel beaver dam removal.

No juvenile salmon had been captured in this channel since 2006, when the crew had documented a large beaver dam at the mouth. The 2009 crew found that the beaver colony was not active and breached the dam. Sampling by DFO in mid September resulted in no juveniles being captured. This was probably due to the low numbers of juvenile salmon in the Klondike in 2009.

Staff and Administration

Hiring a dedicated supervisor with background in Fisheries was very effective. In 2007 there were some challenges involved in finding someone qualified to work a short contract in the middle of the busy summer season. This year, our supervisor from last year returned and he

had previous experience in fisheries, having worked at the Fishing Branch and having completed the Fish course “Fishery Technician Program” through Yukon College that was held in Dawson City.

The number of resumes that came in for the two local high school student positions was low. The job advertisement was posted at the Robert Service School, Klondike Employment Centre and other locations in the community. Both students were punctual, enthusiastic, competent and enjoyed the work. The students appreciated nature and it seemed the open discussion on site was one of the big teachings of the project.

Hiring local students raises the potential that they will want to be involved in future local projects or to choose a career in natural resource management. Further, the knowledge and experience they gathered will be described to their peers, thereby instilling an interest in salmon and their habitat in other local youth. Both students produced a report reviewing their experience (see Appendix D).

Some suggestions to enhance the educational experience of the youth workers include:

- A concerted effort to connect them with other types of fishery field work;
- Being given more opportunities to learn, in experiential ways, the importance of salmon in the ecosystem of this region.
- Continue connecting with other youth workers in the field as when the Youth Community Steward came to participate, for a day;
- Encouraging student workers to have open discussions at the creeks and to promote the practice (and benefits) of recording observations. The reports of the students are attached and the value in having students involved is expressed through their writing.

The length of the project this year worked well for the students and the supervisor. All three were available on daily basis and were anxious to go.

The administration component of the project was successful, particularly in the management of human resources and the budget.

The vehicle arrangement was satisfactory. Renting a vehicle from Whitehorse would have been more costly than our budget allowed. The project supervisor provided a 4 x 4 truck that worked well. This year the students preferred to do the drives to return home each day as they had other commitments in town, at home and with sports.

Public participation was limited this year. Contacts were made in advance, however individuals were not able to commit for an outing. Weather was also a consideration, due to the wet summer. The single day trip with the Tr'ondëk Hwëch'in youth, elder and a staff member went well. The demonstration gave the public a clear idea of what the project entailed. This year, the public day took place at the Germaine Creek Reclamation project area on the Klondike River. This was a great selection as it was conveniently close to town and a safe place for the youth. The elder and youth were able to see the variety of fish that were trapped. Gaining public support early in the season would need to begin earlier, through public posters and emails.



CONCLUSIONS AND RECOMMENDATIONS

The 2009 project provided valuable information to compare to previous years and to plan for future years.

The DDRRC makes the following recommendations:

- Continue to hire a dedicated supervisor with experience in fieldwork.
- Identify additional salvage sites through community input and field investigations.
- Continue to hire a crew of high school aged students as field assistants.
- Make a concerted effort to connect the project with other types of fishery work being done in the field in the Dawson Area. To be aware of other R&E projects in the community and in some cases would be effective to work over lap at different stages at certain creeks and rivers.
- Having overnights at 40 Mile could be a possibility, to minimize traveling time. Depends on commitments in town for the team.
- Continue to rent 4 x 4 pick up to be able to drive in back country areas, where it's easy to get stuck in the mud.
- The culvert at Mickey Creek could be backwatered by building up the channel bottom at the end of the outlet pool with rock. Alternative, Highways of Yukon

Government could be approached to do this. This would allow juvenile salmon free access through the culvert.

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APPENDIX A

Protocol for the Baiting Of G-Type Minnow Traps for the Capture of Juvenile Chinook salmon In the Yukon River Drainage Basin

Fisheries and Oceans Canada
Habitat and Enhancement Branch

Baited G-type minnow traps have proven to be an effective means of capture for juvenile Chinook salmon in the Yukon River drainage basin. Trapping has been conducted by consultants, public interest groups, and government agencies. Salmon roe was the main bait that was used to trap the juveniles.

DFO Habitat developed the following Protocol in 1985 to provide a consistent methodology for G-type minnow trapping in the Yukon River Drainage basin in Canada:

Traps are baited with either Yukon River Chinook or Chum salmon roe. The roe is not salted or otherwise chemically preserved. A “walnut” sized” piece of roe is placed in a perforated thin plastic sandwich or similar bag, and the bag tied off.

(Note: roe is most easily handled when it is frozen: freeze the skeins flat, and chip off appropriate sized pieces. Thin, flexible plastic bags will remain flexible even in cold water. Zip closure bags tend to be stiff and are not recommended. Even very slight current will “pump” thin plastic bags and expel attractant from the bait. Perforations are most easily made with an “Exacto” or similar hobby knife blade: up to 15 bags may be stacked and 0.5 to 1.5 cm long cuts made through them).

The bags of roe are kept frozen for as long as possible before using, as they are most easy to handle when in this state. The potential of the odour of the roe attracting bears is also decreased.

The traps are prepared by having a tether of string or line attached to either of the halves. The trap is baited, closed, and a twist tie (paper coated wire) is used to tie the two halves together. **The minnow trap clip is not used**, as traps are often lost due to high water, etc: if the halves of the trap remain joined together, the trap will continue to capture and destroy fish. When closed by a twist-tie, the trap will quickly open and cease to capture and destroy fish.

When setting the traps in a new area, it is advisable to place the traps in all available types of habitat. Habitat utilisation by juvenile Chinook tends to vary from location to location: pre-judgement is not advisable. The traps should also be marked with survey flagging. A 24 hour set is recommended.

APPENDIX B

Incidental Bycatch 2009

	Date	Slimy Sculpin	Longnose Suckers	Grayling	Burbot
Clinton Creek	Jul-28-09	15	11		3
	Jul-29-09	6	11		
	Jul-30-09	4	21		
	Aug-06-09	6	14		3
	Aug-07-09	6	12		2
	Total		37	69	0
Mickey Creek	Jul-28-09	16		59	
	Jul-29-09	38		44	
	Jul-30-09	63		29	
	Aug-06-09	9		4	
	Aug-07-09	14		3	
	Total		140	0	139
Germaine Creek	Jul-15-09	63			3
	Jul-16-09	26			
	Jul-17-09	23			3
	Jul-20-09	17			2
	Jul-21-09	21			
	Jul-22-09	9			1
	Jul-23-09	12			
	Jul-24-09	7			
Total		178	0	0	9
Lousetown Side channel	Aug-4-09	12			3
	Aug-5-09	9			3
	Total	21	0	0	6
Logjam Island	Jul-17-09	28			
	Jul-20-09	9			
	Jul-21-09	7		1	
	Jul-22-09	2			2
	Total	46	0	1	2
North Fork Intake	Jul-23-09				
	Jul-24-09	1			
	Total	1	0	0	0
Grand Total		423	69	140	25

APPENDIX C

Yukon River North Mainstem Salmon Restoration and Enhancement – Record of Activities

Fortymile River

Clinton Creek

Drainage Area: 206 sq km

Clinton Creek is the first west bank tributary upstream of the mouth of the Fortymile River. The watershed has been much affected by the abandoned Clinton Creek asbestos mine. Failures of waste rock dumps have resulted in the creation of Hudgeon Lake and in significant contributions of sediment to the lower creek. Storage of water in the upper drainage may be buffering flows sufficiently that beaver are able to maintain dams across the creek. Beaver dams were identified as a probable obstruction in 2005

Actions in 2006

DDRRC Stewardship crew relocated 782 juvenile Chinook salmon from the lower creek to the Wolverine Creek area. Salmon appeared in large numbers in the lower creek, between July 7 – July 12. DFO reported 17 beaver dams between the mouth and the mine site in August.

Actions in 2007

DDRRC Stewardship crew relocated 2070 juvenile Chinook salmon from the lower creek to the Wolverine Creek area. Salmon appeared in large numbers in the lower creek when trapping was initiated on July 18.

Actions in 2008

58 Juvenile Chinook salmon were relocated to the mouth of Wolverine Ck. Very high flows affected trapping success and resulted in the breach of most upstream beaver dams.

Actions in 2009

901 Juvenile Chinook salmon were captured and relocated.

Recommendations for 2010

Continue to capture juveniles in lower Clinton Creek and restore them to the creek near the mouth of Wolverine Creek

Mickey Creek

Drainage area: 63 sq. km

Mickey Creek is the first east bank tributary of size of the Fortymile River. Wildfires burned the majority of the drainage basin in 2004. A perched culvert at the Clinton Creek Road crossing was identified as a partial obstruction in 2005.

Actions in 2006

DDRRC Stewardship crew relocated 34 Chinook salmon, but the project ended before large numbers entered the stream.

Actions in 2007

DDRRC Stewardship crew relocated 1273 Chinook salmon. Salmon appeared in large numbers in early August, and probably continued on past the project end.

Actions in 2008

32 juvenile Chinook salmon were relocated over the culvert. Upstream migration of salmon appeared delayed due to the high and cold stream flows.

Actions in 2009

9 Juvenile Chinook salmon were captured and relocated.

Recommendations for 2010

Continue to capture juveniles below the culvert and release them above the culvert, or, if possible, build up the outlet of the plunge pool to backwater the culvert.

Klondike River

Bonanza Creek

Area: not determined

Bonanza Creek flows north and enters the Klondike River downstream of the main Bridge. The drainage basin has been intensively placer mined.

2008 Activities

47 juvenile Chinook salmon and 11 sculpin were captured in 15 trap-nights with the traps set between 5 and 8 kilometres up from the mouth.

Actions for 2009

No samplings were taken from this creek.

Recommendations

No further actions are recommended.

Germaine Creek area salvage

The Klondike River has developed a new channel in this area. The old channel carries water in the spring. As water levels fall, the Klondike River no longer enters the channel. A series of isolated pools remain and extend downstream to the mouth of Germaine Creek.

Actions in 2007

Salvage took place, resulting in the return of 1297 fry to the Klondike River.

Actions in 2008

8 juvenile Chinook salmon were relocated to the main channel. Flows in the Klondike rose in July and the isolated pools were re-connected to the river.

Actions in 2009

419 Juvenile Chinook were captured and relocated.

Recommendations for 2010

Continue to salvage juveniles from the isolated pools and release them into open waters.

Goring Creek

Area: not determined

Goring Creek flows north from a defined valley into a series of wetlands and then to the Klondike River

Activities in 2008

No juvenile Chinook salmon or other fish were captured in 5 trap-nights at the Klondike Highway crossing.

Actions in 2009

No samplings were taken from this creek.

Recommendations.

No further actions are recommended.

Dempster Bridge area salvage

A series of pools extend down the right (north) side of the river.

Connection with the river depends on ground water inflows

Actions in 2007

Salvage took place, resulting in the return of 101 fry to the Klondike River.

Action in 2008

The crew checked this area but the pools were not isolated due to the high flows.

Action in 2009

No isolated pools in this area.

Recommendations for 2010

Monitor and salvage juveniles if necessary.

North Klondike River

Action in 2008

There was no work done due to high water levels

Action in 2009

One isolated pool with juvenile salmon was located at the North Fork intake

Recommendations for 2010

Monitor area and salvage juveniles as necessary

Viceroy Channel

Drainage area: Not applicable

Viceroy Channel is a small, ground water fed channel. It is crossed by the Viceroy Mine Road about 800 meters upstream from it's mouth. A beaver dam was established about 300 meters upstream from the mouth in the summer of 2005.

Actions in 2006

DDRRRC Stewardship crew relocated 13 Chinook salmon by July 6, and then ceased trapping due to the low returns for the effort expended.

Actions in 2007

Trapping took place early in the project, resulting in the release of 16 fry to the Viceroy channel.

Actions in 2008

The area was blocked by beaver dam and high possibilities, so there was no work done due to high water level.

Actions in 2009

The abandoned beaver dam was opened up to clear the way for the salmon to move up the channel.

Recommendation for 2010

Monitor channel at road crossing to determine whether juveniles have migrated into the creek.

Too Much Gold Creek

Area: not determined

Too Much Gold Creek flows from a narrow valley into a series of wetlands extending to the Klondike River.

Activities in 2008

No juvenile Chinook salmon or other fish were captured in 6 trap-nights at the Klondike Highway crossing.

Activities in 2009

No sampling were taken from this creek.

Recommendation

No further activities are recommended.

Leotta Creek

Leotta Creek is 2 km east of Dempster junction and west of Flat Creek. The water flows narrowly from the hills and flows into the Klondike River.

Activities in 2008

No juvenile Chinook salmon or other fish were captured in 2 trap-nights at the Klondike Highway crossing.

Activities in 2009

No sampling were taken from this creek.

Recommendation

No further activities are recommended.

All Gold Creek

All Gold Creek enters the South Klondike River immediately west of the mouth of Flat Creek. The drainage basin has been intensively placer mined, and the creek is unstable.

Activities in 2008

No Juvenile Chinook salmon were captured 4 slimy sculpin were captured in 8 trap-nights at the Klondike Highway crossing.

Activities in 2009

No sampling were taken from this creek.

Recommendations

No further activities are recommended.

Flat Creek

Area: not determined

Flat Creek enters the South Klondike River from the south. The Klondike Highway crosses the creek near the mouth

Activities in 2008

No juvenile Chinook salmon were captured in 6 trap-nights. 3 burbot were captured at the Klondike Highway crossing

Activities in 2009

No sampling were taken from this creek.

Recommendations

No activities are recommended in 2010

Lousetown Pond

This pond was tested because it can get connected with the Klondike River during high water.

Activities in 2009

No salmon were caught in the 19 traps that were set for two days. There were however, 90 whitefish and 11 burbot caught the first day and 83 whitefish, 13 burbot, and 1 longnose sucker caught the second day. The total amount of fish caught in this pond was 198 consisting of 173 whitefish, 24 burbot, and 1 longnose sucker

Recommendation for 2010

APPENDIX D

Locations of Traps

2009

1. Clinton Creek and Mickey Creek are tributaries of the lower Forty-Mile river
2. Germaine Creek at the mouth in the old channel of the Klondike River
3. Logjam Island which is approximately 1 km upstream from the Dempster Corner
4. North Fork Intake which is approximately 10 kms up the Dempster Highway by the North Klondike River
5. Lousetown at the side channel of the Klondike River approximately 1 km upstream from its confluence with the Yukon River
6. Lousetown Pond which is located beside the Klondike River just before the confluence with the Yukon River

APPENDIX E

Student Reports

Salmon Project 2009

During the summer of 2009 I participated in a salmon fry rescue project through DDRRC. I thought the project was pretty well done and that its concepts were great, but there were a few things about it that I didn't particularly love. Such as the amount of time we got to do things. I usually got them done way before the time was done, so we would end up driving around looking for fish areas which maybe could have been spent doing other more productive things. But that is maybe just because the DDRRC hired some highly skilled workers.

During my time at work I learned how to sample a fish (the DFO way). To sample a fish you have to set a trap and capture the fry, then you measure their length, their weight, and clip their anal fin. I'd learned about it before but I got a lot of practice doing it in the field. I also got to see a live adult salmon for the first time.

Not only did I learn a lot about salmon doing this job I also learned a lot about Yukon geography and history. I learned how the trenches were made at North Fork, what the markings on the rocks of the river bed mean, and the history of Clinton Creek mine. At the end of the project I got to work with a lady from the fish and game board of Alaska. She taught me a lot and showed the differences between the way Canada does things and the way the USA does things. If the program ran again I would probably do it because I don't have to work inside, I get to be in the water, I learn about more fish, AND I get to go bush exploring as part of my job.

- Hayley Riemer -

Salmon Project Summer 2009

This year I worked on the salmon relocation and habitat enhancement program run by the DDRRC. Working with another student and supervisor, we trapped salmon that would otherwise have perished in isolated pools of water as well as moving salmon further up creek systems to give them a better chance of survival.

For the first week we set traps in isolated pools near Germaine Creek releasing well over one hundred chinook fry into the river. We also set traps at other locations along the Klondike River where salmon had been trapped. On Viceroy Creek on the Viceroy Mine road, we removed and abandoned beaver dam to allow salmon fry to move upstream to good habitat. The other half of the project was conducted in the Fortymile region on Mickey and Clinton Creek. On Mickey Creek, we trapped numerous arctic grayling and some chinook fry. We moved them above the culvert on the road to allow them access to better habitat. Overall, very few salmon were trapped on Mickey Creek. On Clinton Creek hundreds of fry were trapped and released further upstream above a series of obstructions. In addition to salmon, we encountered burbot, slimy sculpin and longnose suckers. We saw, on two occasions, a female black bear with two cubs. We determined that they were likely the bears that had opened many of the traps and eaten the bait. For a few days we set traps in the "Lousetown" pond on TH traditional land. No salmon were trapped but we did trap numerous whitefish and burbot.

Overall, I thought the project was a great way for students to gain hands on field experience and learn about the many types of fish living in streams throughout the region. I learned a lot from this project and believe it is an excellent way to teach people about salmon as well as increasing the fry survival rate.

I think an interesting idea for another project would be to do an assessment of all the streams in the Klondike Regions and determine what types of fish are living where so that we can better protect them in the future.

- Report prepared by Luke Hunter -