



Teslin Incubator Chinook Salmon Eggs (Photo by Teslin SSC)

**Yukon Schools Salmon Stewardship Coordinators
2012-2013**

**Final Report R&E Project 17-STE-11
November 2013**

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Abstract

Salmon Stewardship Coordinator (SSC) services were provided to Yukon schools to assist teachers with the delivery of DFO's Stream to Sea program over the 2012-13 school year, and to build community capacity for delivery of the program in subsequent years. SSCs worked with 26 teachers at 16 schools in 10 Yukon communities. Eleven SSCs and assistants engaged approximately 346 students, 26 teachers, and 20 other community members engaged in salmon-related educational activities. SSCs worked with Fisheries and Oceans Canada (DFO) and partners that included Whitehorse Rapids Hatchery, McIntyre Salmon Incubation Facility, Blind Creek weir project and Ta'an Kwachan Fox Creek Project to provide salmon eggs, education services and aquatic studies field trip opportunities.

SSCs worked to increase their own capacity and capacity within the schools to deliver the Stream to Sea program. They also sought community support from outside of the schools, and longer term commitment to support the program. SSCs worked primarily with biologists from other agencies, First Nation language teachers, environmental non-profit groups and other salmon incubation projects to foster partnerships that will strengthen the community capacity.

Introduction

This project engaged Salmon Stewardship Coordinators in Yukon communities to assist teachers with the delivery of DFO's Stream to Sea program in Yukon Schools. The program provided education resources to teach students from Kindergarten to Grade 12 about salmon and their habitats. The Salmon Stewardship Coordinators provided technical support to help teachers with related fisheries education activities, including salmon incubation equipment set-up and operation, coordination of classroom activities, delivery of presentations, and facilitation of field trips to study aquatic habitat and release salmon fry; they focussed on the value of the local resource. Over the duration of the project, coordinators were also responsible for building support within each community, including within the school, to allow the continuation of the Stream to Sea program.

The focus on local salmon resources helped students to develop an understanding of salmon and local aquatic habitat, and to develop a stewardship ethic which they will be able to integrate into their decision making in future careers and recreational pursuits. Parents of students and people in the broader community were also reached indirectly through communication of students with other family and community members and directly through involvement in field trip support. These informed citizens who value the resource are better able to make decisions that contribute to ensuring the long term sustainability of Yukon River salmon.

Methods

Contract Preparation

DFO (SEP personnel) contacted the prospective SSC candidates identified at the proposal development stage, First Nation governments Renewable Resources management personnel, school administrators and school teachers to develop a list of qualified personnel for SSC contracts. Potential candidates were asked to complete a questionnaire to allow DFO to verify that they had the knowledge, skills and experience to conduct the work. Individuals or organizations were then contracted to provide support for the Stream to Sea program in Yukon Schools for the first fiscal year of the project, up to March 31st, 2013. DFO subsequently prepared contracts for the second fiscal year portion of the project, April to June 2013.

Salmon Incubation Preparation- Egg Collection

Eggs for classroom incubation were collected in accordance with transplant and collection licenses by DFO, community partners, and SSCs when run timing and the timing of contract establishment permitted. SSCs provided newly fertilized chum eggs to some schools, while Chinook eggs and some chum eggs were incubated by DFO and community partners until SSCs delivered them to schools at the eyed stage.

Salmon Incubation Preparation- Incubator setup

SSCs contacted schools in their respective areas to inform them of the availability of the program and resources and to identify which teachers were interested in Stream to Sea activities, including incubation. SSCs worked with teachers who were interested in incubation to ensure that their schools' had properly functioning incubation equipment, and then facilitated the delivery of salmon eggs to the classes.

Education Program

Throughout the remainder of the school year, SSCs assisted teachers with incubator operation and maintenance, with delivery of Stream to Sea program classroom activities and presentations, and with facilitation of aquatic studies field trips.

Capacity Building

SSCs were asked to seek community support for the Streak to Sea program, and to record the contacts they had made and the commitments they had secured that could enhance the capacity of the community to continue the program in the absence of Yukon River Panel funding.

Evaluation

DFO faxed or emailed a questionnaire to involved teachers to assess their involvement with the Stream to Sea program, and the value that the teachers placed on the program activities and SSC support.

Results and Discussion

Contract Preparation

DFO established eight SSC contracts between August and November for the portion of the project that occurred prior to March 2013. SSC services for Mayo, Dawson, Carmacks and Whitehorse were each provided by qualified individuals from within the community; successful SSC candidates demonstrated their suitability through completion of a questionnaire regarding their knowledge, skills and experience, and through their resumes. SSC services for Pelly were provided by the neighboring Carmacks SSC. First Nations in Teslin, Carcross and Old Crow were contracted to provide SSC services in these communities. SSC services for the North Alaska Highway and the Ross River/Faro area were provided by a Whitehorse contractor.

Six contracts were established in April for the portion of the project that occurred between April and July 2013. In the new fiscal year the North Highway and Ross River/Faro area services were provided by the Whitehorse SSC, and a second contract was not established for the Mayo area due to changes in availability and eligibility of contractors.

Salmon Incubation Preparation- Egg Collection

DFO collected Chinook salmon eggs at the Klondike River on August 1st, at Blind Creek on August 17th, with the assistance of the Blind Creek weir project personnel, and at Tatchun River on August 28th. Klondike eggs were incubated at the McIntyre Creek Salmon Incubation facility until the eyed stage, at which time they were transferred to DFO. DFO incubated Blind Creek, Tatchun River and eyed Klondike Chinook eggs in a classroom incubator until SSCs were contracted in Dawson, Faro and Ross River.

Whitehorse Rapids Hatchery staff collected Chinook eggs from the Whitehorse Rapids Fishway from August 14 to Sept 9, 2012; eggs were taken primarily for hatchery incubation but included a portion allocated for use in Whitehorse area schools. These were incubated at Whitehorse Rapids Hatchery until the eyed stage, at which time they were transferred to McIntyre Salmon Incubation Facility. Dawson and Faro area contracts were not completed prior to the Chinook spawning season in these areas.

On October 25, 2012, the Kluane area SSC collected Chum eggs from the Kluane River with some assistance from DFO. A portion of these eggs were delivered directly Haines Junction and Destruction Bay schools, where they were fertilized and incubated, while a few were taken to McIntyre to be incubated to the eyed stage prior to delivery to schools.

Salmon Incubation Preparation- Incubator setup.

SSCs notified schools of the availability of the program and the resources, and then worked with interested teachers between October 2012 and December 2012 to prepare for salmon incubation in 16 schools, as listed in Table 1.

Table I. Salmon Stewardship Coordinators and Interested Schools Schools.

SSC Contract Area	SSC	Interested Schools 2012
Carcross	Carcross Tagish First Nation	Ghùch Tlá Community School
Carmacks & Pelly Area	Beverly Brown	Eliza van Bibber School Tantalus School
Dawson City	Sebastian Jones	Robert Service School
Rural Schools: North Alaska Highway	Can-nic-a-nick Environmental Services	Kluane Lake School St. Elias School
Rural Schools: Ross River & Faro Area	Can-nic-a-nick Environmental Services	Ross River School
Mayo	Danica Wrench	JV Clark School
Old Crow	Vuntut Gwichin First Nation	Chief Zzeh Gittlit School
Ross River & Faro Area	Can-nic-a-nick Environmental Services	Ross River School
Teslin	Teslin Tlingit Council	Teslin School
Whitehorse Area	Can-nic-a-nick Environmental Services	Golden Horn Elementary Ecole Emilie Tremblay Elijah Smith Elementary School Jack Hulland Elementary School Porter Creek High School Selkirk Elementary School Whitehorse Elementary School

SSCs helped teachers to set up incubation systems, check functioning of incubators; they repaired or replaced components where necessary. DFO provided its inventory of replacement parts to SSCs; SSCs

purchased parts if spare parts were not available at DFO. The Whitehorse SSC expedited the repair of chillers. The Old Crow SSC took initial steps to foster interest in Chief Zzeh Gittlit School; however program implementation was postponed until next year.

Education Program

In some schools, much of the SSC project time was spent assisting teachers with incubation system monitoring and maintenance, and expediting supply and equipment replacement and repairs. SSCs assisted Yukon teachers with educational activities throughout the school year, including lessons about salmon species, life cycles, habitat, fisheries, stock assessment, management, cultural importance, traditional harvesting and processing, anatomy, and careers in fisheries. The approach taken by each SSC varied with the SSC, the topic, and the age of the students; SSCs worked with classes from Grade 1 to Grade 12. SSCs offered lesson facilitation in French to classes in the French Immersion and French language education systems. SSC approaches included presentations, facilitated discussions, art projects, and facilitating exercises from various curricula. SSCs encouraged teachers to use the available online educational resources and to find specific local information on Yukon River Panel websites. Websites with these resources are listed in Table II: SSC Learning Resources and Websites. “I am Salmon”, a Tlingit culture resource, was used in the Carcross school. DFO provided salmon life cycle posters and maps showing adult Chinook habitat utilization in Yukon for SSCs to distribute to schools. DFO also provided SSCs with salmon for demonstration dissections.

At the end of the school year, SSCs worked with teachers to organize field trips to local aquatic habitats. Classes in Ross River, Dawson, Mayo, Carmacks, Pelly, Haines Junction, and Destruction Bay released fry back into natal streams. Classes in Whitehorse returned their fry to the McIntyre incubation facility, for later release at Fox Creek, and carried out aquatic studies in the adjacent McIntyre Creek drainage. Carcross students visited the Whitehorse Rapids Hatchery and the McIntyre site at the end of the year.

Table II. SSC Learning Resources and Websites.

Learning Resource	Website
Fisheries and Oceans Canada. Salmonids in the Classroom Primary.	http://www.pac.dfo-mpo.gc.ca/education/documents/sicprimary-secprimaire/english/sic_primary_all.pdf
Fisheries and Oceans Canada. Salmonids in the Classroom Primary.	http://www.pac.dfo-mpo.gc.ca/education/documents/sicinter-secinter/sic_intermediate.pdf
Other Stream to Sea online Intermediate resources links	http://www.pac.dfo-mpo.gc.ca/education/intermediate-intermediaire/index-eng.html
Other Stream to Sea online Primary resources links	http://www.pac.dfo-mpo.gc.ca/education/primary-primaire/index-eng.html
Yukon River Panel Joint Technical Committee Reports	http://yukonriverpanel.com/salmon/publications/joint-technical-committee-reports/
Yukon River Panel Restoration and Enhancement Fund Reports	http://yukonriverpanel.com/salmon/restoration-enhancement/re-fund-reports/
Pacific Streamkeepers Federation website and The Streamkeepers Handbook and Modules	http://www.pskf.ca/publications/handbook.html

The involvement of the SSCs with Stream to Sea program activities are summarized by community in Table III.

Table III. Salmon Stewardship Coordinator School Activities and Participation.

SSC and Classes	Activities	Number of Students/community members	Salmon Raised
Carcross SSC Ghùch Tlà Community School: Grade 2/3 class Grade 5/6 class	Classroom incubation- Tank maintenance and trouble shooting 4 Half day Workshops using Tlingit First Nation teaching material, on salmon life cycles and habitat (watersheds), particularly the Yukon River Class games and activities related to life cycles and habitat. Field trip to Whitehorse Rapids and McIntyre Incubation Facility	9 students 2 teachers Guest artist Guest elders 2 volunteers	Whitehorse Rapids chinook eggs (61) ~Nov 28 – June 11
Dawson SSC Robert Service School: Grade 6 (Dewell, Owen)	Classroom incubation- Tank maintenance and trouble shooting Life cycle board game Fry requirements and care Salmon habitat requirements Salmon management Field trip to release fry: May 21	12 Students 2 teachers	Klondike River Chinook eggs (100) Nov 24-May 21
Carmacks/Pelly SSC Tantalus School: Grade 3-4 (Einnish) Grade 1-2 (Buyk) Assistant (Wheeler)	Classroom incubation- Tank maintenance and trouble shooting Salmon art contest Lesson: Life Cycle, habitat needs Lesson: Yukon watershed and migration Discussion lesson: clean water & pollutants Aquatic invertebrates as indicators of aquatic health. Fry release and stream study June 3 –with Whitehorse SSC assistance.	32 students (est) 2 teachers ~4community adult chaperones	Tatchun River Chinook (50 eggs) ~22 fry released Nov 29 – June 3
Carmacks/Pelly SSC Eliza van Bibber School: Grade 5-6 (Mott, Ward) Grade 9 (Mott, Bryant)	Classroom incubation- Tank maintenance and trouble shooting Life cycle requirements Migration and watershed. Dissection (by teacher) Fry release and stream study June 3 –with Whitehorse SSC assistance.	20 students (est) 5 teachers ~2 community adult chaperones	Tatchun River Chinook (50 eggs) ~32 fry released Nov 1 – June 3

Senior class (Vogel)			
Whitehorse SSC Whitehorse Elementary: Grade 5 (Levesque)	Classroom incubation- Tank maintenance and trouble shooting Incubation and life cycle presentation Dissection Fry release and stream study June 10	30 students 1 teacher	Whitehorse Rapids Chinook (100 eggs) Nov 6-June 10
Whitehorse SSC Ecole Emilie Tremblay: Grade 3 (Roy)	Classroom incubation- Tank maintenance and trouble shooting Incubation and life cycle presentation Dissection Fry release and stream study June 11	30 students 1 teacher	Whitehorse Rapids Chinook (100 eggs) Nov 5-June 11
Whitehorse SSC Golden Horn: Grade 5 (Nyman)	Classroom incubation- Tank maintenance and trouble shooting Incubation and life cycle presentation Dissection and slide presentation Fry release and stream study May 31	15 students 1 teacher	Whitehorse Rapids Chinook (100 eggs) Nov 6-May 31
Whitehorse SSC Porter Creek High School: Grades 10 & 11 (Comeau)	Classroom incubation- Tank maintenance and trouble shooting Incubation and life cycle presentation	20 students (est) 1 teacher	Whitehorse Rapids Chinook (100 eggs) Nov 6-June 17
Whitehorse SSC Elijah Smith School: Grade 7 (Bradford)	Classroom incubation- Tank maintenance and trouble shooting Incubation and life cycle presentation Slide Presentation dissection Fry release and stream study June 4.	30 students 1 teacher	Whitehorse Rapids Chinook (100 eggs) Nov 5-June 4
Whitehorse SSC Selkirk School: Grade 6/7 (Morham)	Classroom incubation- Tank maintenance and trouble shooting Incubation and life cycle presentation Fry Release and Aquatic Studies Field Trip: May 23	22-30 students	Whitehorse Rapids Chinook (100 eggs) Nov 5-May 23
Whitehorse SSC Jack Hulland School: Grade 4 (Moore)	Classroom incubation- Tank maintenance and trouble shooting Incubation and life cycle presentation Presentation Dissection	25 students 1 teacher 1 volunteer	Whitehorse Rapids Chinook (100 eggs) Nov 5-May 30

	Fry release and stream study May 30.		
Mayo SSC or Dawson SSC (release only) JV Clark School Grade 11 Sustainable Resources (Erickson) Grade 9-10 (Erickson) Grade 4-6 (Christie)	Classroom incubation- Tank maintenance and trouble shooting Salmon Life Cycles Salmon habitat Fisheries mgmt. and legislation Environmental impact of fishing Presentation on legislation, careers, species of salmon and other fish in rivers in YK, AK (Yukon River) Presentation on importance of salmon to FN culture, methods of catching fish, methods of preparing (canning, smoking, etc.) Population Estimation techniques Sustainability in Mayo area Dissection Fry Release Klondike: May 21	30 students 3 teachers (including SSC) 1 Environmental Assessment officer 1 visiting biologists 3 NND elders	Klondike Chinook (100 eggs) October 25- May 21
Rural Schools SSC or Whitehorse SSC (post March) St. Elias School Grades 8 to 11 (Preto)	Classroom incubation- Tank maintenance and trouble shooting Presentation/slides life Yukon salmon life cycles and habitat Dissection	30 students 1 teacher	Kluane chum eggs (0) and Whitehorse Rapids chinook (~50 fry returned to McIntyre) Oct 25 - May 9
Rural Schools SSC or Whitehorse SSC (post March) Kluane Lake School Grades K-8 (Blair-Smith, Prestone)	Classroom incubation- Tank maintenance and trouble shooting Presentation life cycles Fry release and Aquatic studies Kluane River: May 28.	14 students 2 teachers 4 community volunteers	Kluane chum eggs (~30 fry released) October 25- May 29
Rural Schools SSC or Whitehorse SSC (post March) Ross River School Grade 3-4 (Etzal, Metcalfe)	Classroom incubation- Tank maintenance and trouble shooting Class presentation life cycles Fry Release and Aquatic studies Blind Creek: June 14	15 students 1 teacher 1 teacher's assistant 2 volunteers 3 weir crew	Blind Creek Chinook (100 eggs) Nov 26- June 14
Teslin SSC Teslin School Grade 7-9 (Postoloski) Tlingit (Jules)	Classroom incubation- Tank maintenance and trouble shooting Life cycles Salmon species Teslin Chinook and Yukon	25 (est.) students 3 teachers	Whitehorse Rapids Chinook (100 eggs) Nov 13-June 13 (fry returned to

Principal (Darling)	watershed Meeting regarding Tlingit language curriculum and salmon		McIntyre)
Old Crow SSC Chief Zzeh Gittlit School: Grades 4-6 (Landey)	Classroom incubation equipment inventory	1 teacher	Fishing Branch chum (no eggs taken)

The school projects engaged approximately 346 students, 26 teachers, and 20 other community members, in addition to 11 community members who acted as SSCs or assistants, and the estimated 10 community partners involved from Whitehorse Rapids Hatchery, McIntyre Salmon Incubation Facility and Ta'an Kwachan Fox Creek Project. Between 50 and 100 eggs were provided to each class. Most classes had good success with incubation; some fry mortality was attributed to the poor quality of the batch of Kluane chum eggs, and some was due to incubation equipment malfunction. The percentage of Yukon Schools that worked with the SSCs is shown in Table III. Overall fifty-five percent of schools used the program; this includes the 55% of Whitehorse schools that used the program.

Table III. Summary of Schools Engaged with Salmon Stewardship Coordinators in 2012-2013.

Community	Schools that worked with SSCs in 2012-2013	Number of Schools in the Community	Percentage of schools that worked with SSC
Whitehorse (Elementary Schools)	6	11	55%
Whitehorse (High Schools)	1	4	25%
Dawson	1	1	100%
Mayo	1	1	100%
Pelly Crossing	1	1	100%
Faro	0	1	0%
Carmacks	1	1	100%
Carcross	1	1	100%
Destruction Bay	1	1	100%
Teslin	1	1	100%
Haines Junction	1	1	100%
Old Crow	0	1	0%
Ross River	1	1	100%
Beaver Creek	0	1	0%
Watson Lake (High School)	0	1	0%
Watson Lake (Elementary School)	0	1	0%
Total	16	29	55%

Capacity Building

SSCs focussed much of their efforts on re-establishing the Stream to Sea program in Yukon Schools, and on developing contacts in the schools. They also began the process of seeking longer term commitment and support for the program. SSCs worked primarily with teachers, but also with biologists from other agencies, First Nation language teachers, environmental non-profit groups and other salmon incubation projects to foster partnerships that will strengthen the community capacity. The contacts they made are summarized in Table IV.

Table IV. Community Contacts and Committed Support for Stream to Sea Program.

SSC and Community	Contact Organizations, Names and Commitments of Support
Carcross SSC	Carcross Tagish First Nation: CTFN Natural Resources department (Bill Barret Jr. and Tami Hamilton) provided coordination support to the program, and would like to see the program continue.
Dawson SSC	<p>Robert Service School: Helen Dewell, teacher Gr.6 Will use available resources (Salmon in Classroom, Streamkeepers) to teach curriculum, is committed to working with SSC to deliver curriculum Will partner with SSC to ensure tank is on temperature, is clean, that the students monitor tank conditions and will ensure equipment is stored suitably during off season. Will work with the SSC and the Jane Goodall Institute to secure funds for maintenance of equipment and field trip costs. Fish and Wildlife Enhancement Trust: Dennis Zimmerman will accept applications for funding Jane Goodall Institute: Representative supported 2013 water monitoring project, and provided training for teacher to conduct water quality monitoring with students; will consider subsequent funding applications</p>
Carmacks/Pelly SSC	Tantalus School: Ruth Blackjack Grade 1-2 Teacher and Donna Einnish Grade 3-4 Teacher discussed program takeover in following years.
Carmacks/Pelly SSC	Eliza van Bibber School: Jess Ward Grad 5-6 Teacher discussed program takeover in following years. The school still requires technical support for the incubation system set-up and maintenance, and with field studies.
Whitehorse SSC	<p>Whitehorse area schools provided transportation funding for field trips Whitehorse area teachers discussed potentially taking on more responsibilities for incubation system maintenance and instruction in upcoming years. Some experienced teachers undertook more responsibilities. SSC started to investigate options and the YESAB process to expand the selection of release sites and possibly broodstock, to reduce the transportation costs. Whitehorse Rapids Hatchery: Lawrence Vano, Hatchery Manager supports the Stream to Sea program and will strive to provide eggs for classroom incubation to the project when they are required. Whitehorse Rapids hatchery provided salmon food to the Whitehorse SSC for distribution to the schools. Yukon Research Centre of Yukon College: Clint Sawiki, Yukon Research Centre Coordinator has SSCs to use the McIntyre incubation facility for incubation of salmon to the eyed stage. The Yukon Research Centre also permitted the SSCs to use the McIntyre facility for Stream to Sea program field trips and tours. Yukon College is expected to continue to provide this support as long as they continue to operate the McIntyre facility.</p>

Mayo SSC or Dawson SSC (release only)	<p>The Community Education Liaison Coordinator worked with the SSC to arrange to have elders from the First Nation speak to the classes about salmon and stewardship; this partnership may be pursued again in the future.</p> <p>Local biologists from the Yukon Government and YESAB provided presentations on salmon population assessment and environmental assessment. These presentations may be requested again in the future.</p> <p>JV Clark School: Laura Erickson (Grade 9-11 teacher) and David Christie (Grade 4-6 teacher) had previous experience with classroom incubation and salmon curricula and are interested in providing future classes, particularly incubating local salmon.</p>
Rural Schools SSC Kluane Area	<p>Kluane Lake School: Roxienne Prestone and rose Mary Blair Smith (Grade K-8 teachers) have many years of experience with classroom incubation and are interested in working with community members to collect broodstock and take eggs. The school has developed the capacity to operate the incubation system part of the program with little support.</p> <p>First Nation Language instruction was also linked to the salmon studies, and this will likely continue in future years.</p> <p>Kluane First Nation: Geraldine Pope supports the program and allows renewable resource management personnel to participate in egg collection when scheduling permits.</p> <p>St. Elias School: Andy Preto (Grades 8 to 11 teacher) has previous experience with the Stream to Sea program and is interested in future classroom incubation.</p>
Rural Schools SSC Ross River/Faro	<p>Ross River School: Fran Etzel (Grade 3-4) has previous experience with the Stream to Sea program and is interested in future classroom incubation.</p>
Teslin SSC	<p>Teslin Tlingit Council: TTC Renewable Resources technicians provided support to program; TTC do not have staff available to commit to the program but are open to further involvement.</p>
Old Crow SSC	<p>Vuntut Gwichin First Nation: William Josie, Fish and Wildlife Coordinator supports the program and would like to have the school involved with incubation of local salmon.</p>

Evaluation

DFO received five completed project evaluation questionnaires and a verbal response. Respondents valued the portions of the program that they used, but the levels of engagement were highly variable, and some had used only a few activities. All respondents expressed the desire to be involved with the program again. Respondents also noted that they valued experienced and timely support; some felt that they would have used more activities and the program would have been improved with more support from the SSCs.

Conclusions and Recommendations

The Salmon Stewardship Coordinators provided the necessary support to re-activate the Stream to Sea program in Yukon Schools. Hundreds of students at sixteen schools in ten Yukon communities benefitted from the project. The dozens of teachers and community members engaged with the project

also learned about the Stream to Sea program and about Yukon salmon and habitat as a result of their involvement.

Contract Preparation and Incubation Preparation

The completion of contractual arrangements for the Salmon Stewardship Coordinators project contracts took longer than anticipated, partly due to time-consuming processes associated with the engagement of new contractors who had not previously been registered as vendors. Due to this delay, the project was shorter in duration than was originally proposed. DFO conducted some early project work, including license applications, egg takes, and initial incubation.

SSC Services were delivered out of Whitehorse for the North Alaska Highway and the Faro and Ross River area, due to lack of availability of local qualified and interested contractors. In some communities, DFO contracted organizations to supply the SSC services, rather than contacting one qualified individual. Due to personnel changes within these organizations, and other conflicting organization commitments, fewer SSCs services were provided in these communities than was planned. The problem with conflicting priorities could be avoided by assigning the SSC contract to one responsible contractor.

Education Program

The Stream to Sea program was well-received in Yukon Schools. The main problems encountered were delayed starts and incubation equipment problems caused. An earlier start to the project would allow SSCs to garner more teacher and interest and school participation in the program, and to test and remedy equipment problems well in advance of the start of the incubation project. This would improve the effectiveness of the program.

The program delivery strategies of the SSCs varied necessarily with the interests of the schools and communities and with the ages of the students. The fields and levels of expertise of individual SSCs also varied; the program delivery would be enhanced with coordinated oversight to ensure that the expertise of all SSCs was available to all the communities.

Field trips were a highlight of most class programs. During preparation and after completion of the field trips, teachers and SSCs identified that more field gear and supplies, including invertebrate specimens, plasticized watershed maps, would enhance the project. Coordination of the program under a lead SSC would make the acquisition and sharing of field equipment more feasible in the short term. The project did not involve the assessment of changes in student knowledge and attitudes which could enable interested parties to better assess the value of this project. SSCs and teachers could work together to develop a method to assess and describe the effect of the program on students.

Capacity Building

Since this was the first year of the project, and the experience of the participants was very diverse, the development of the skills and knowledge of SSC individuals and organizations was a necessary and large part of the capacity building; however, initial steps were taken to build capacity for project support in the broader community. The partnerships that were initiated in the past year will need to be strengthened to ensure that communities develop the capacity to deliver the Stream to Sea program. The teacher expertise that was fostered in the first year should be enhanced. SSCs should seek the commitment of teachers to take on the work of routine incubation system maintenance, the SSC hands on support should be replaced with online directions and phone guidance when possible to reduce the

associated SSC time and travel costs. While the experience of the first year indicates the value of coordination by one lead SSC, this approach should be accompanied by an increased emphasis on development of an exit strategy to ensure that the community capacity is developed in the absence of multiple local contracts.

Evaluation

The teacher evaluations of first year of the project clearly indicated that the Stream to Sea program and program support is highly valued. The feedback also indicated approaches that could improve the efficiency and effectiveness of the SSC project in subsequent years: Contracting a lead SSC to employ and oversee other community SSCs is likely to improve the development of expertise in all areas by enhancing the sharing of knowledge and resources. It will also allow for efficiencies in program. The sharing of personnel among the areas could reduce inconveniences to teachers due to lack of availability of individuals; it is thus likely to increase the ability of SSCs to respond quickly to teacher requests, and thus improve program effectiveness.

Evaluation of the effect of the project activities on students' knowledge and attitudes could lead to improved future program delivery.

Appendix: Financial Statement

Proposed Expenses vs. Actual Expenses:

Project costs were lower than the proposed budget overall. Expenses for mileage were slightly higher than proposed, while wages and equipment costs were much lower. The difference between the proposed and actual travel costs was due to the additional travel required for delivery of SSC services from Whitehorse, rather than from two additional community hubs, and due to travel required for replacing defective equipment. Labour costs were lower than proposed both because the project started later than scheduled (fewer Panel funds than were planned were used due to this increased in-kind contribution from DFO), and because the project was carried out in fewer schools (15 instead of 21) and fewer communities (10 instead of 12) than proposed. The reduced number of schools also resulted in other project cost savings; a new chiller was not required, and few other incubation system parts were purchased. SSCs identified additional equipment needs after completion of the school year and postponed purchasing until a future project year.

		Proposed		Actual	
Labour		28,031		14,046	
Site/ Project Costs		14,577		6,191	
	travel		4,397		4,669
	Capital (chiller and shipping)		1,150		-
	supplies and repairs		8,400		1,522
	repairs		630		
Overhead (communications)		1,440		457	
Taxes		-		737	
Total		44,049		21,431	

Expenses by Fiscal Year:

	SSC Contract Expenses		
Community	April 2013 to July 2013	Sept 2012 to March 2013	Grand Total
Carcross		2006.78	2006.78
Carmacks/Pelly	3080.36	2103.96	5184.32
Dawson	768.75	977.11	1745.86
Faro/Ross River/Kluane		2439.95	2439.95
Mayo		1030	1030
Old Crow	0	0	0
Teslin	777.98	814.26	1592.24
Whitehorse		3487.36	3487.36
Whitehorse & Whitehorse-based Rural School Support	3944.04		3944.04
Grand Total	8571.13	12859.42	21430.55

Expenses by Line Item:

	SSC Contract Expenses					
Community	Mileage/ Travel	Wages/ Services	Supplies	Communica tions	Tax (GST)	Total
Carcross		\$1,436.92	\$360.00	\$114.30	\$95.56	\$2,006.78
Carmacks/Pelly	\$1,296.44	\$3,412.21	\$171.65	\$57.15	\$246.87	\$5,184.32
Dawson	\$130.00	\$1,532.72			\$83.14	\$1,745.86
Faro/Ross River/Kluane	\$1,111.40	\$1,305.29			\$23.22	\$2,439.91
Mayo		\$834.79	\$67.29	\$114.30	\$13.62	\$1,030.00
Old Crow						\$0.00
Teslin	\$230.58	\$1,361.66				\$1,592.24
Whitehorse	\$457.44	\$2,081.98	\$857.83	\$0.00	\$90.11	\$3,487.36
Whitehorse & Whitehorse-based Rural School Support	\$1,442.65	\$2,080.12	\$65.14	\$171.42	\$184.71	\$3,944.04
Grand Total	\$4,668.51	\$14,045.69	\$1,521.91	\$457.17	\$737.23	\$21,430.51

DFO Accounts Records:

Report: ALYD100E
 FY: 2012-2013
 Fiscal Period: 12

Assets and Liabilities
DETAILED TRANSACTIONS
 by Responsibility Centre, Project, Allotment and Line Object
 Report as of March 31, 2013

Page: 1 of 2
 Date: 08/04/2013
 Time: 12:50 PM

Vendor Name / Customer Name	Invoice Number/ Misc Receipt	Batch Name	Transaction Description	PO Number / Receipt Number	Invoice Date / Misc Receipt Date	Bus. Line	Allot Code	Lobj Code	Invoice Amount
REGION: Pacific									
RESPONSIBILITY CENTRE: SF400 Area Chief,Habitat and Enhancement, Yukon Transboundary									
PROJECT: 57515									
PACIFIC SALMON COMMISSION	53092139F	AR 67164 Receivables 9899273: A 67164	CQ NO.0039 SPA 57515	53092139F	26-JUL-12	441	750	3211	(32,139.00)
TOTAL LINE OBJECT: 3211 Collaborative arrangements as per s. 33 of the Oceans Act, Revenues									(32,139.00)
BEVERLY BROWN	PCSSC003	13135F1003	PELLY & CARMACKS SALMON STEWARDSHIP COORDINATOR	F1622-124010	31-MAR-13	441	750	4207	626.90
BEVERLY BROWN	PCSSC002	13125F1006	PELLY & CARMACKS SALMON STEWARDSHIP COORDINATOR	F1622-124010	28-FEB-13	441	750	4207	952.06
BEVERLY BROWN	PCSSC001	13115F1014	PELLY & CARMACKS SALMON STEWARDSHIP COORDINATOR	F1622-124010	28-NOV-12	441	750	4207	525.00
CAN-NIC-A-NICK ENVIRONMENTAL SCIENCES	SSC WHITEHORSE 2012-13 #2	13125F1006	WHITEHORSE AREA SALMON STEWARDSHIP COORDINATOR	F1622-124014	28-FEB-2013	441	750	4207	892.91
CAN-NIC-A-NICK ENVIRONMENTAL SCIENCES	3/A	13135F1003	WHITEHORSE AREA SALMON STEWARDSHIP COORDINATOR	F1622-124014	31-MAR-201	441	750	4207	140.15
CAN-NIC-A-NICK ENVIRONMENTAL SCIENCES	SSC RURAL SCHOOLS 2012-13 #2	13125F1006	SALMON STEWARDSHIP COORDINATOR FOR ROSS RIVER, FARO, HADNES JUNCTION, BEAVER CREEK AND DESTRUCTION BAY	F1622-124017	28-FEB-2013	441	750	4207	530.00
CAN-NIC-A-NICK ENVIRONMENTAL SCIENCES	2012-10	13105F1009	SALMON STEWARDSHIP COORDINATOR FOR ROSS RIVER, FARO, HADNES JUNCTION, BEAVER CREEK AND DESTRUCTION BAY	F1622-124017	16-DEC-2012	441	750	4207	1,541.21
CAN-NIC-A-NICK ENVIRONMENTAL SCIENCES	29-NOV-2012/A	13085F1012	WHITEHORSE AREA SALMON STEWARDSHIP COORDINATOR	F1622-124014	21-NOV-201	441	750	4207	2,454.30
CAN-NIC-A-NICK ENVIRONMENTAL SCIENCES	3	13135F1003	SALMON STEWARDSHIP COORDINATOR FOR ROSS RIVER, FARO, HADNES JUNCTION, BEAVER CREEK AND DESTRUCTION BAY	F1622-124017	31-MAR-201	441	750	4207	368.74
CARCROSS TAGISH FIRST NATION	F1622124012-1	13135F1003	CARCROSS SALMON STEWARDSHIP COORDINATOR	F1622-124012	31-MAR-201	441	750	4207	2,006.78
DANICA LAUREN WRENCH	SSC MAYO 002	13125F1006	MAYO SALMON STEWARDSHIP COORDINATOR	F1622-12401	04-MAR-201	441	750	4207	286.84
DANICA LAUREN WRENCH	04APR2013/A	13135F1003	MAYO SALMON STEWARDSHIP	F1622-12401	31-MAR-201	441	750	4207	456.97

This report provides a listing of all year-to-date assets and liabilities by Responsibility Centre, Project, Allotment and Line Object.

Filter used to generate Report: NBX.ALLT_CODE = '750' AND NBX.RC_CODE = 'SF400' AND NBX.PRJ_CODE = '57515'

Report: ALYD100E
 FY: 2012-2013
 Fiscal Period: 12

**Assets and Liabilities
 DETAILED TRANSACTIONS
 by Responsibility Centre, Project, Allotment and Line Object
 Report as of March 31, 2013**

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 Date: 06/04/2013
 Time: 12:50 PM

Vendor Name / Customer Name	Invoice Number/ Misc Receipt	Batch Name	Transaction Description	PO Number / Receipt Number	Invoice Date / Misc Receipt Date	Bus. Line	Allot Code	Obj Code	Invoice Amount
REGION: Pacific									
RESPONSIBILITY CENTRE: 5F400 Area Chief,Habitat and Enhancement, Yukon Transboundary									
			COORDINATOR						
DANICA LAUREN WRENCH	1	13065F1006	MAYO SALMOM STEWARDSHIP	F1622-12401	07-NOV-201	441	750	4207	286.19
			COORDINATOR						
SEBASTIAN JONES	86	13125F1006	DAWSON SALMON STEWARDSHIP	F1622-124005	04-MAR-201	441	750	4207	775.94
			COORDINATOR						
SEBASTIAN JONES	87	13135F1003	DAWSON SALMON STEWARDSHIP	F1622-124005	31-MAR-201	441	750	4207	201.17
			COORDINATOR						
TESLIN TLINGIT COUNCIL	04APR2013/A	13135F1003	TESLIN SALMON STEWARDSHIP	F1622-124015	31-MAR-201	441	750	4207	184.75
			COORDINATOR						
TESLIN TLINGIT COUNCIL	WAGES TSS	13125F1006	TESLIN SALMON STEWARDSHIP	F1622-124015	19-FEB-2013	441	750	4207	629.51
			COORDINATOR						
			TOTAL LINE OBJECT:	4207	Teachers,Instructors-Contract				12,659.42
			TOTAL ALLOTMENT:	750	Collaborative arrangements as per s. 33 of the Oceans Act				(19,279.58)
TOTAL PROJECT: 57515 Pacific Salmon Commission , Collins, S (17-STE-12)									(19,279.58)
TOTAL RESPONSIBILITY CENTRE: 5F400 Area Chief,Habitat and Enhancement, Yukon Transboundary									(19,279.58)
TOTAL REGION: Pacific									(19,279.58)
Grand Total:									(19,279.58)

This report provides a listing of all year-to-date assets and liabilities by Responsibility Centre, Project, Allotment and Line Object.
 Filter used to generate Report: NBX.ALLT_CODE = '750' AND NBX.RC_CODE = '5F400' AND NBX.PROJ_CODE = '57515'

**Assets and Liabilities
DETAILED TRANSACTIONS**
by Responsibility Centre, Project, Allotment and Line Object
Report as of October 30, 2013

Vendor Name/ Customer Name	Invoice Number/ Misc Receipt	Batch Name	Transaction Description	PO Number / Receipt Number	Invoice Date / Misc Receipt Date	Bus. Line	Allot Code	Obj Code	Invoice Amount
REGION: Pacific									
RESPONSIBILITY CENTRE: SF400 Area Chief/Habitat and Enhancement, Yukon Terrestrial									
PROJECT: 57515									
Pacific Salmon Commission	H00389C28	AR 72484 Receivables 10866902: A 72484		H00389C28	29-JUL-13	441	750	3211	(32,139.00)
Pacific Salmon Commission	H00127C16	AR 72264 Receivables 10825835: A 72264		H00127C16	30-APR-13	441	750	3211	(7,510.00)
Pacific Salmon Commission	H00269C23	AR 72224 Receivables 10828202: A 72224		H00269C23	17-JUN-13	441	750	3211	(14,331.00)
TOTAL LINE OBJECT: 3211 Collaboration as per s. 33 of the Oceans Act/s.4.4 of the Fisheries Act - Funds									(53,980.00)
GONCALVES, JACQUELINE	20-AUG201357515/1	14055F1007	PROJECT 57515 REFUND OF UNSPENT CA FUNDING		20-AUG-13	441	750	3311	(8,571.13)
GONCALVES, JACQUELINE	20-AUG201357515/1	14055F1007	PROJECT 57515 REFUND OF UNSPENT CA FUNDING		20-AUG-201	441	750	3311	8,571.13
PACIFIC SALMON COMMISSION	NEW-17-STE	1313562084	NEW-17-STE UPSENT COLLABORATIVE FUNDING		31-MAR-201	441	750	3311	(19,219.58)
PACIFIC SALMON COMMISSION	20-AUG-201357515	14055F1007	PROJECT 57515 REFUND OF UNSPENT COLLABORATIVE AGREEMENT FUNDING		20-AUG-201	441	750	3311	13,269.87
		Reverses *131365631H06 Adjustment: EXTERNAL(ED CAD)*01- MAY-13 09:02:47 - 10661909	To cancel Invoice # NEW-17-STE- Vendor: PACIFIC SALMON COMMISSION - Invoice entered twice in OY			441	750	3311	19,219.58
TOTAL LINE OBJECT: 3311 Collaboration as per s. 33 of the Oceans Act/s.4.4 of the Fisheries Act - Expen									13,269.87
BEVERLY BROWN	PCSS0304	14045F1003	SALMON STEWARDSHIP COORDINATORS FOR YUKON SCHOOLS INV # PCSS0304	F1622-134008	24-JUN-2013	441	750	4207	3,080.36
CAN-NIC-A-NICK ENVIRONMENTAL SCIENCES	F1622-134014	14045F1003	SALMON STEWARDSHIP COORDINATORS FOR YUKON SCHOOLS # F1622-134014	F1622-134014	19-JUN-2013	441	750	4207	3,944.04
SEBASTIAN JONES	087	14045F1003	DAWSON SALMON STEWARDSHIP COORDINATOR INV # 087	F1622-134032	23-JUN-2013	441	750	4207	768.75
TESLIN TLINGIT COUNCIL	146809-JUL-2013	14045F1010	SALMON STEWARDSHIP COORDINATORS FOR YUKON SCHOOLS CUST #1469	F1622-134010	09-JUL-2013	441	750	4207	777.98

This report provides a listing of all year-to-date assets and liabilities by Responsibility Centre, Project, Allotment and Line Object.

Filter used to generate Report: NRX.ALLT_CODE = '750' AND NRX.RC_CODE = 'SF400'

Report: ALYDIME
 FY: 2013-2014
 Fiscal Period: 7

**Assets and Liabilities
 DETAILED TRANSACTIONS
 by Responsibility Centre, Project, Allotment and Line Object
 Report as of October 30, 2013**

Page: 2 of 2
 Date: 10/30/2013
 Time: 02:59PM

Vendor Name / Customer Name	Invoice Number/ Misc Receipt	Batch Name	Transaction Description	PO Number / Receipt Number	Invoice Date / Misc Receipt Date	Bus. Line	Allot Code	Leqj Code	Invoice Amount
REGION: Pacific									
RESPONSIBILITY CENTRE: 5F400 Area Chief/Habitat and Enhancement, Yukon Transboundary									
			TOTAL LINE OBJECT:	4207	Teachers,Instructors-Contract				8,571.13
			TOTAL ALLOTMENT:	750	Collaborative arrangements as per s. 11 of the Oceans Act/s 4.4 of the Fisheries.				(32,139.00)
TOTAL PROJECT:			57515	Pacific Salmon Commission, Collier, S (17-STE-12)					(32,139.00)
TOTAL RESPONSIBILITY CENTRE:			5F400	Area Chief/Habitat and Enhancement, Yukon Transboundary					(32,139.00)
TOTAL REGION:			Pacific						(32,139.00)
								Grand Total:	(32,139.00)

This report provides a listing of all year-to-date assets and liabilities by Responsibility Centre, Project, Allotment and Line Object.
 Filter used to generate Report: NBX.ALLT_CODE = '750' AND NBX.BC_CODE = '5F400'