Review of Restoration and Enhancement projects funded in 2016

Status Report. Dec 14th, 2016.

CONSERVATION

1. Development of a genetic-baseline for Canadian-origin Yukon River chinook and chum salmon. Year 1.

DFO conducted chinook genetic sampling in the Teslin watershed (Wolf River, Nisutlin River, McNeil River, Morley River and Swift River), the Pelly River watershed (Hoole River) and the North Big Salmon River, and the Nordenskiold River. Additional samples were provided from opportunistically collected chinook samples from the Porcupine watershed. 476 chinook samples have been prepared for shipping, and will be sent to the Pacific Biological Station and to the ADF&G genetics lab. Additional chinook samples from the Porcupine River chinook telemetry and Chum samples from the mainstem Yukon will also be provided. A report summarizing the genetic sample collection will be provided to the Panel in March 2017.

2. Genetic stock identification of fall Chum Salmon in subsistence harvest from the Tanana Area, Yukon River, 2016. Year 3 URE 05-16

This was the final year of a three year project to look at timing of stocks passing by the village of Tanana on the north bank. A total of 906 samples were taken beginning in the middle of August through the end of September. There were many days in August where the river water was very high preventing fishing. However, samples were taken before and after this event and we achieved our sampling goals. A final report summarizing all three years of data will be finished on schedule and submitted in June 2017.

3. Yukon River Chinook Subsistence Harvest Genetic Stock Identification, 2016. Year 5 URE 03-16

This was the first year for a unified, river wide, subsistence harvest sampling. Twelve villages held sampling training and they were all well attended. Five samplers were chosen in each community (60 samplers in total) with back up samplers identified in case someone was unable to sample. Community coordinators were also hired in each village to be the contact person who held extra supplies, could assist with sampling questions and who coordinated sending all the samples back to Spearfish Research. 1209 samples were collected from the subsistence harvest Chinook fishery this year. Our goal of 200 samples was met in Kaltag (District 4) and Tanana (District 5). While this goal was not met in all villages, this was the first year of this project restarting in the lower river and the first year fishing restrictions were relaxed to allow some chinook fishing opportunity. We anticipate more samples in future years. Analysis of genetic samples and ages are not yet complete. These will be included in a final report to be due by June 2017.

4. Genetic stock ID of Canadian-origin Yukon River chinook and chum salmon. Year 15.

Genetic tissue samples were collected form 740 chinook and 862 chum salmon at the Eagle sonar test fishery. ADF&G processed samples for shipping to the DFO Pacific Biological Station (PBS) Molecular Genetics Laboratory. PBS will analyze 1500 of these tissue samples and will provide the genetic stock composition data to DFO Yukon Treaties and Fisheries. The genetic mixed stock analysis results will be included in a report to the Panel in March 2017, and summarized for inclusion in the 2017 JTC Report.

5. Genetic Stock ID of Pilot Station Chinook URE 92-16.

Tissue samples were taken from the majority of Chinook salmon caught in the test fishery at the sonar project located near Pilot Station and analyzed in three strata for genetic mixed stock analysis (MSA). The three strata periods were May 30–June 14 (number sampled (n) = 178), June 15–June 25 (n=288), and June 26–July 6 (n=111). The total number of Chinook sampled was among the highest since GSI started. Genetic MSA indicated the Canadian-origin stock proportion of each stratum to be 52%, 34%, and 54% for the first, second, and third stratum, respectively. The season-total Canadian-origin proportion was 43% (genetic proportion weighted by passage. These stock estimates coupled with the Chinook passage estimated at Pilot Station sonar were essential to in-season management and the ability to accurately project the passage at the Eagle sonar project.

6. Porcupine River chinook salmon sonar program.

Following initial setup and testing of the sonar systems, data was recorded continuously on both banks of the river from 1430 hrs on June 24, 2016 to 1800 hrs on August 12, 2016. A total of 6,457 upstream migrating Chinook salmon were counted during the period of operation of the Chinook sonar program. Data analysis and post-season run timing analysis is ongoing, therefore these numbers represent a preliminary estimate for upstream migration at this time. Set netting was conducted between June 25 and August 12, 2016; a total of 78 Chinook salmon, one burbot (*Lota lota)* and two lake whitefish (*Coregonus clupeaformis)* were captured during 250 hours of set netting. A total of 38 drift netting sets were conducted between July 26 and August 12, 2016, and resulted in the capture of 3 chum salmon on August 12, 2016 and 1 Inconnu *(Stenodus nelma).*

7. Blind Creek chinook enumeration weir.

The 2016 Blind Creek Chinook count was 21% above the previous 13 year average of 547. The Chinook run timing was early and similar to the 2014 run in Blind Creek.

There was a considerable amount of rain during the 2016 season resulting in murky water conditions for much of the season. All fish entering the pen under these conditions were either sampled or released by netting them out.

8. Chinook salmon sonar enumeration on the Big Salmon River.

A total of 6,691 targets identified as Chinook salmon was counted during the period of operation. Chinook salmon were observed on the first day of sonar operations on July 11. The Chinook passage peaked on July 28 and 90% of the run had passed the station on August 9. A total of 135 dead or moribund Chinook was recovered during the carcass pitch. All sampling data and scale cards were submitted to DFO, stock assessment upon completion of the sonar operation. A total of 361 juvenile Chinook was captured in minnow traps set during the carcass pitch. DNA samples were collected from 198 of these and delivered to DFO Whitehorse upon completion of field operations.

9. Yukon River Border Sonar operations URE 16-16.

The Yukon River Border Sonar was operational from July 1 to October 6, 2016 (5 days earlier than normal in anticipation of an early run). A total of 72,329 Chinook and 144, 035 fall chum salmon were estimated to have passed the sonar site. Both sonars performed well the entire season and there were no major technical difficulties or failures. Drift gillnetting was conducted to collect age, sex, and length samples and tissue samples for genetic information. Post season review of data is complete, and the final report is currently in draft.

10. Pelly River chinook salmon sonar pilot program.

Following initial setup and testing of the sonar systems, data was recorded continuously on both banks of the river from 19:00 hrs on July 1 to 17:00 hrs on August 3, 2016. A total of 4,740 upstream migrating Chinook salmon were counted during the period of operation of the Chinook sonar program. Data analysis and post-season run timing analysis is ongoing; therefore, these numbers represent a preliminary estimate for upstream migration at this time. Set netting was conducted between July 3 and August 2; a total of 16 Chinook salmon, three inconnu (*Stemodus nelma*) and one Northern pike (*Esox lucius*) were captured during 180.2 hours of set netting. A total of 91 drift netting sets were conducted between July 21 and August 2, resulting in the capture of only a single Chinook salmon on July 24.

11. Enhancing the information value of CWT's applied to Canadian origin chinook salmon.

DFO completed an outreach component of this project in the summer of 2016, and will provide a report on project to the Panel in March 2017.

12. Yukon River Canadian-origin juvenile chinook out-migrant assessment. Year 2.

The field work for this project, sampling of juvenile chinook salmon captured in the Big Salmon River with a rotary screw trap, seine net and Gee traps, was completed between May 3rd and August 21, 2016. Approximately 13,000 chinook salmon were sampled in 2016. A report to the Panel summarizing the project results will be submitted in March 2017.

13. Porcupine River chinook salmon telemetry.

A total of 80 Chinook salmon were radio tagged in the vicinity of Caribou Bar Creek between July 12 and 29, 2016. Other fish captured but not radio tagged included: 16 Chinook salmon, 1 chum salmon, 1 inconnu and 1 broad whitefish and 1 northern pike. The Chinook tagged ranged in length from 62 to 113 cm with an average of 83.5 cm and median length of 83.5 cm also. Of the tags applied, 50% of Chinook were male and 50% were female. A total of 6 radio tags were recaptured in the local fishery and 3 of the tags were turned in soon enough to be reapplied to new Chinook. When combined with data from the stationary towers, the aerial tracking flights conducted in August and early September 2016 accounted

for 61 of the 77 tags applied (80%). A total of 7 tags were detected on the Bell River. The Crow River watershed constituted the primary spawning destination for the tagged Chinook accounted for 50% of the tags relocated (when the tag dropouts/mortalities and Old Crow tags are removed) followed by the Bell River watershed (15%) and the Miner and Whitestone river watersheds

14. Fishing Branch River chum habitat assessment.

The scheduled Fall field visit was made in mid-October. A redd survey was completed on the 25 km study area of Fishing Branch River to determine the abundance and distribution of redds. The number of observed chum salmon and redds were noticeably higher than last year, and spawning was observed in a few side channels. In addition to the redd surveys, the river was filmed with a HD video camera and a FLIR (infrared) video camera. The data from the infrared video will be used to try to detect warm (groundwater fed) areas in the river. The eight monitoring stations established in October 2015 were visited and data was downloaded from continuous water level loggers and temperature loggers. Four new monitoring sites were established, including the installation of loggers. EDI project lead Ben Snow has moved on and been replaced by professional biologist Scott Dilling.

15. Michie Creek salmon habitat monitoring project.

The Michie Creek salmon monitoring project was again successfully completed in 2016. Three two day field trips were completed using aircraft to gain access to the spawning site. Temperature and water level loggers were installed in the spring and recorded data throughout the summer and throughout the Chinook spawning period. One beaver dam was breached just on the mainstem of the river just before the arrival of salmon. Migrating salmon once again had access to the prime spawning area at the outlet of Michie Lake. While spawning numbers of salmon through the Whitehorse Rapids Fish Ladder were above average, the number of spawning redds enumerated in Michie Creek was low. An increase in fishing pressure combined with a significant male bias of the run were thought to be contributing factors to the low redd count in Michie Creek during the summer of 2016.

16. Yukon River mid-mainstem salmon assessment program.

Objectives are 1) to conduct habitat assessments to characterize aquatic health and habitat and determine the extent of juvenile Chinook distribution, and 2) determine the extent of spawner distribution within, specifically; tributaries to the Little Salmon River, Nordenskiold River & Big Creek.

17. Temperature monitoring of Yukon River chinook salmon spawning and migration habitats in Canada.

The third year of implementation of the "Temperature Monitoring of Yukon River Chinook Salmon Spawning and Migration Habitats in Canada Program" was successfully completed. The Temperature Monitoring Network was operated, maintained and adaptively managed as proposed. A Seasonal Station, Teslin River at Hootalinqua was converted to an Annual Station, Teslin River above Hootalinqua. A new Seasonal Station, Yukon River above the Klondike Highway was established.

18. "Assessing the limits to production of juvenile Canadian-origin Yukon River chinook over wintering habitat " with a grant amount awarded of $29,000 Can.

Field work for this project commenced in July 2016. Sampling events are scheduled to occur regularly throughout the winter of 2016-17. A report to the Panel summarizing the project activities and results will be provided to the Panel in March 2017.

RESTORATION

19. Ta'an Kwach'an Council – Fox Creek salmon restoration project.

20. Deadman Creek chinook restoration pilot project and in-stream egg incubation trial

The current project was intended as a trial of various egg planting methods in Deadman Creek with Morley River being used as a control. The project was successful in this regard and it will not be until the late winter or early spring that the fate of the planted eggs will be determined. At such time, all of the egg planting sites will be visited with a portion of the Jordan Scotty incubators and Whitlock-Vibert boxes removed to check on the status of the eggs. If it is determined that the eggs have not yet hatched, the remaining incubators will be left in place and revisited at a later date. The locations of the egg insertion tubes may also be carefully sampled to obtain an estimate of live eggs/alevins vs those which are dead. Collectively, this information will be used to guide the expansion of the Deadman Creek Chinook Stock Restoration Project from a trial to a full program. The final report of the current project is planned to be complete during June 2017 and will also include a stock restoration plan for Deadman Creek including targets for egg planting/survival among other components such the juvenile monitoring and expansion of the Deadman Creek walking trail.

21. Coded wire tagging of hatchery origin Canadian origin chinook salmon fry.
The 2016 CWT program was successfully delivered. 192,948 Chinook salmon fry were tagged, clipped, and released (Michie Cr., Wolf Cr., Fox Cr., M'Clintock R., Yukon R. Mainstem). We were particularly pleased with the professional tagger retained for McIntyre Creek Incubation Facility this year. Final report is in the works.

22. Porcupine River chum salmon restoration, incubation & rearing pilot project.
In 2016, the Panel approved several restoration and enhancement projects that Vuntut Gwitchin Government (VGG) undertook in partnership with a number of other organizations. As you are aware, VGG is pursuing this technical work in an effort to better understand Porcupine River salmon distribution, habitat health, and population dynamics for future planning and management. The FBR chum salmon restoration project (remote egg-take/rearing program/outplant) is one of these projects, and DFO has been a partner with the VGG on this project. VGG was unable to provide the necessary support to see the chum incubation field activities through in 2016, but through recent correspondence, have indicated that they are looking forward to picking up those activities in. As such, we are requesting Panel consideration of project extension until March 2018. We were successful in undertaking community engagement, procurement, and hatchery support activities in 2016 and look forward to providing an interim report to the Panel by December 2016. SEP will remain the technical lead on this initiative while VGG will continue to head up community-based project interests, engagement, and support.

23. Rock River chinook and chum habitat assessment & restoration investigation.

24. Porcupine drainage engagement, gathering, mapping, and integrating local and traditional knowledge.
In person report to the Panel on Dec 14th 2016 from Erika Tizya-Tramm.

STEWARDSHIP

25. Salmon Stewardship Coordinators for Yukon Schools.

I have 22 Yukon schools participating in 2016/17. The program has become very popular this year with more schools participating than ever before. All permitting (collection and transplant permits) was completed well in advance of any field work being initiated. I've finished seeding eggs in nearly all rural community schools using locally sourced eggs from either chinook or chum salmon. This work was completed in August and October during the peak spawning periods for each respective species. I'm currently working on setting up aquariums in the Whitehorse area and seeding with eyed eggs from Chinook salmon that have been donated by Yukon Energy through there Whitehorse Rapids Fish Hatchery program. I should have all aquariums set up to incubate eggs by mid-November. After that, the project will be completed by providing classroom presentations, dissections and field trips that will include the release of the resulting fry in the spring of 2017.

26. Yukon River North Mainstem Stewardship

The project proceeded as planned and the field component has been completed. The Project Report is being prepared and will be submitted prior to December 31, 2016.

27. Tr'ondek Hwech'in First Fish Youth Culture Camp.

I am trying to have the written report summarizing our camp's activities this summer to you by early next week. This is definitely one of my top priorities because First Fish appreciates the funding from R&E so much.

28. McIntyre Creek salmon incubation project.

- A total of 1,017 juvenile Chinook from 11 separate Stream to Sea classroom incubation projects were delivered to MCSIP in the spring of 2016. These fish were coded-wire tagged and released into Fox Creek in July.
- An Open House on June 12 brought 135 people to the facility to raise awareness learn about our role in the stewardship of Upper Yukon River salmon.
- MCSIP continues to serve as a living laboratory for Yukon College students from several different program.
- The 2015 cohort of Chinook salmon produced 45, 687 tagged juveniles for the Fox Creek Chinook Salmon Incubation Project which were released in 2 lots on July 15 and 17, 2016.
- A study comparing rearing efficiencies between Capilano Troughs and conical bottom round tanks shows that the round tanks stimulate faster growth, but require more maintenance.
- MCSIP continues to work with Ta'an Kwach'an First Nation in developing a comprehensive plan for the rearing and tagging of juvenile Chinook from the 2016 broodstock year.
- A total of 34, 147 eyed Chinook eggs were received from Whitehorse Rapids Fish Hatchery on October 26, 2016. These eggs are currently in the incubation trays, are being monitored daily and we expect to pond them in late March 2017. Mortalities so far are low and there are no signs of disease in the eggs.

29. Yukon River chinook salmon stock restoration community Technical Team.

The second year of the YSSC's Chinook salmon stock Restoration Technical Team project has been underway since June 2016 when tech team member Al von Finster attended VGG/YSSC's Local and Traditional Knowledge (LTK) Porcupine Drainage Engagement (CRE-105-16N) in Old Crow. Finster participated as a technical advisor with the added benefit of having rich local knowledge from years of living and working in the region. The project continues to provide some support to Ta'an Kwäch'än Council's Fox Creek Salmon Restoration Project (CRE-25-16) and is exploring options to assist with mitigating the effects of beaver dams on salmon in Fox Creek. In September members of the SR Tech team met with DFO's Salmonid Enhancement Program team and other DFO staff in Whitehorse for a full day to provide opportunity for the YSSC and DFO to update each other on their respective efforts, objectives, and priorities related to stock restoration in the Yukon, identify opportunities for YSSC and DFO SR related efforts to be better aligned so that available resources are most effectively utilized and to discuss the concept of a stock restoration framework for the Yukon. Selkirk First Nation (SFN) has also expressed an interest in working with the YSSC Stock restoration tech team to mitigate the effects that beaver dams may have on salmon. We are currently planning a stock restoration 'road show' for the first week of February as a means to loop back to the communities with the results of the work done thus far and to facilitate focused discussions about Stock restoration in their regions.

COMMUNICATIONS

30. Yukon River in-season salmon management teleconferences.

There is value in having a public forum that is accessible to the people of the Yukon River to call in to hear first-hand about the status of the salmon fisheries. While there are other methods, such as faxes and e-mail news releases that are sent out to communities, this is the only toll free number that a person can call in and speak with the managers in a weekly forum. The total number of participants in the YRDFA 2016 Teleconferences was 857 callers over the 13 weeks of the calls. An average of 66 callers per/call participated with the highest numbers, 84-99 per-call occurring in June, early in the runs, reflecting the deep interest communities have around Chinook salmon. In July as multiple Chinook pulses had passed many lower and middle river communities' call-ins drop into the 70's and by the last week in August call numbers were in the mid-thirties this year. This is the usual pattern. This year's calls went well despite some technical problems which we will work to resolve for 2017. Overall the carefully managed run with support from fishers and communities on the Alaskan portion of the river were successful in surpassing the Canadian and other escapement goals and allowing some small harvest of Chinook salmon.

31. Yukon River Summer pre-season preparation meeting.

Scheduled for pre-season 2017.