Charting a Course for Yukon Chinook

Yukon Chinook Strategic Stock Restoration Initiative

Year 2 Accomplishments

YUKON SALMON SUB-COMMITTEE

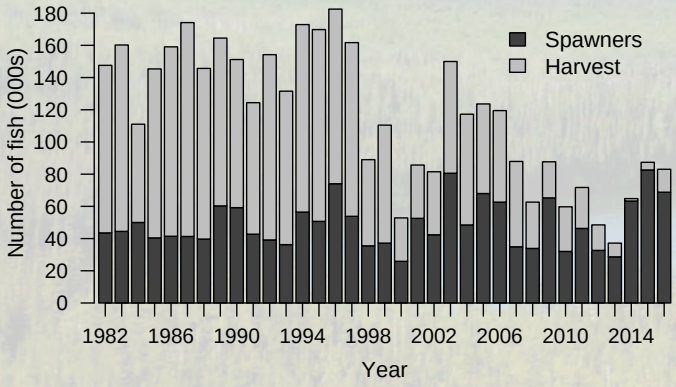
YUKON RIVER CHINOOK SALMON STOCK RESTORATION

Photo courtesy of Peter Mather, 2016

Background

Chinook salmon are an important cultural species for First Nation communities in the Yukon. Depressed returns and low productivity of Chinook in recent decades have led to severe constraints on harvest opportunities and broad interest in taking steps to reverse declines and recover populations.

First Nation governments and their respective communities have taken various and different approaches to manage Yukon River Chinook fisheries and achieve conservation objectives. In addition to First Nation subsistence fishery conservation efforts, the recreational, commercial and domestic fisheries have also not had the opportunity to fish for a number of years.



Estimated Yukon River Canadian-origin Chinook spawner abundance from 1982 to present.

Yukon River Chinook and Chum salmon are managed under the Yukon River Salmon Agreement which provides the mechanism for establishing border and spawning escapement targets for Canadian-origin Chinook and Fall chum salmon.

As the voice of salmon management in the Yukon, and in response to calls from First Nations and communities, the Yukon Salmon Sub-Committee (YSSC) embarked on a multi-year initiative in 2016 to improve the understanding of the role stock restoration could play in helping to recover Yukon Chinook.

What is Stock Restoration?

Stock restortion is the deliberate attempt to return a wild salmon population to natural production levels – that is, the predicted population levels in the absence of one or more limiting factors that jeopardize continued existence or drive low abundance. Stock restoration

The two overarching goals of the initiative and technical team are to:

1. Support the development of a stock restoration framework based on community values, which can be used to help develop, evaluate and prioritize Chinook stock restoration initiatives in the Canadian portion of the Yukon River.
2. Provide technical support and capacity building at the First Nations and community level for stock restoration activities.

Year one of the initiative focused on:

- cataloguing community values, objectives and restoration opportunities;
- reviewing population status and potential limiting factors;
- forming a technical team to help guide the planning process and provide support to community-led restoration activities in the Yukon;
- developing a prioritization framework that matches the quantity and quality of information available in the Yukon; and
- applying the prioritization framework.

A Year of Community Engagament

Stock restoration that takes place in Canada should be community driven and reflect the priorities of those depending on the fish stocks as well as the ecological, climatic and geophysical characteristics of the Yukon. Given land and water development pressures, and challenges with capacity and resources within First Nations lands and resources departments, stock restoration is of interest but often does not get prioritized. Instead there is a focus on harvest management in order to manage and meet First Nations subsistence needs and spawning escapement under the treaty.

Recognizing that knowledge of stock restoration in the Yukon is in its infancy, the YSSC focused year two of the initiative on engagement with First Nation Governments and Renewable Resources Councils to:

- report on findings from year one
- gather additional perspectives on from each FN and RRC on stock restoration
- identify priority stock restoration activities[1], including those underway, and
- discuss priorities and next steps for stock restoration in the Yukon.

During the last week of January 2017 the YSSC and some members of the YSSC technical team travelled to a number of Yukon communities[2] to meet with individual First Nation Governments and Renewable Resources Councils.

The following sections summarize the key themes that emerged from these discussions and are followed by a set of recommendations moving forward.

[1] For more information on stock rectoration activities see the YSSC Year 1 report: Connors, B.M., A. von Finster, J. Gustafson, M. Bradford, J. Trerice, D. Zimmermann, H. Wright, and N. Tamburello. 2016. Yukon Chinook, Stock Restoration Initiative: Technical Team Year 1 Final Report. 136 p. Available via yssc.ca or by contacting Jesse Trerice (j.trerice@yssc.ca).

[2] Communities visited include Mayo, Pelly Crossing, Carmacks, Dawson City, and Whitehorse.

Photos courtesy of Brendan Connors, 2017

Existing and potential Chinook restoration opportunities in the Yukon

The approximate locations and types of existing and potential Chinook stock restoration actions within the 8 major sub-watersheds of the Canadian portion of the Yukon River. Actions were identified in consultation with First Nations communities, past restoration activities supported by the Yukon River panel R&E fund and discussion with other parties involved in salmon management and conservation in the Yukon.

Observations of Natural and Anthropogenic Change

The effects of a changing climate in the Yukon and its impacts on salmon and fishing, are being felt by First Nations RRCs and communities.

Local observations of change include increased river temperatures, changing ice break-up conditions, melting permafrost and landslides, all of which are impacting fish migration conditions, spawning habitat and fishing practices.

There is concern among many communities that current and future industrial resource use, particularly mining and hydropower, is having a direct impact on water quality in rivers and in some instances adversely impacting juvenile and adult Chinook.

Beaver dams and obstruction management is a major concern in many communities. The lack of coordinated and continued trapping, coupled with beaver dam removals is creating challenges for some stocks.


Hydropower
Landslides
Changing Ice Conditions
Rising Water Temperatures

Perspectives on Stock Restoration and Opportunities Moving Forward

There is a very strong desire among Yukon First Nations RRCs and communities to bring Yukon Chinook salmon back to their historical levels. First Nations have strong cultural values associated with salmon harvest but the value of salmon is more than just harvest, their presence across the landscape and for other species (i.e. bears and habitat) is very important. These cultural values translate over to stock restoration considerations and some communities stressed the importance of minimizing the handling of salmon, or otherwise not "messing with nature".

First Nations continue to manage their fisheries accordingly to encourage their customary practices and their traditional laws. These laws govern and direct fishing related activities and should be incorporated into stock restoration activities. Many First Nations and communities stressed the importance of ecological balance when considering stock restoration actions to avoid unintended consequences to the ecosystems in which it occurs. There were some concerns that stock restoration activities may inadvertently negatively impact wild stocks and so any restoration action that is undertaken should carefully consider and monitoring for possible genetic impacts.

Familiarity with, and engagement in, stock restoration activities varies considerably across the Yukon. While some First Nations and communities have been actively engaged in stock restoration including obstruction management, instream incubation and hatchery enhancement, others have not. Regardless of the extent to which a First Nation or community has historically been engaged in stock restoration there was consensus amongst those consulted that stock restoration projects should be community driven and led by First Nation governments, and that frequent communication and agreement among the First Nations, Renewable Resource Councils and the YSSC is a critical part of planning and implementing stock restoration projects in the Yukon.

Examples of specific stock restoration activities being led by First Nations that are underway or under consideration include: the re-establishment of a Chinook spawning population in Fox Creek being led by the Ta'an Kwäch'än Council, discussions around a small-scale conservation hatchery and training institute on Klondike River being led by the Tr'ondëk Hwëch'in, and the Deadman Creek instream incubation project by the Teslin Tlingit Council.

It is important to note that these projects are small scale and unlikely to significantly increase the overall returns of Chinook to the Yukon, however, they are seen as having broad ranging stewardship benefits, community engagement and serve as pilots for new approaches.

Obstruction and Beaver Management

The most consistent and common message from First Nations and communities regarding actions that could be taken to restore Chinook and their habitat was regarding the influence of beaver dams in small Chinook spawning systems that are sensitive to low flows. This is particularly evident with the Northern Tutchone Nations (First Nation of the Nacho Nyak Dun, Little Salmon Carmacks First Nation and the Selkirk First Nation) and less evident in the traditional territories of the Tr'ondëk Hwëch'in that have larger river systems and so are less susceptible to beaver impacts.

There is broad recognition that both beaver and Chinook have been present in the Yukon for thousands of years. However, in recent decades a reduction in activities that historically removed some beavers from the landscape (i.e. hunting and trapping) have led to concerns that extensive beaver activity in low flow sensitive systems is reducing Chinook survival and abundance by limiting access to high quality spawning habitat and impeding upstream juvenile migrations.

The experience from Klusha Creek and Tatchun River is that after, prolonged periods of blockage of upstream access to spawning and rearing habitat due to beaver dams, adult Chinook quickly – often within one to two years - recolonize spawning streams (or portions thereof) after dams are breached.

Any program focused on beaver dam removal and trapping requires annual monitoring and maintenance and needs to be consistently applied on productive Chinook spawning and rearing streams.. In addition, though beaver management requires relatively few resources and training compared to other restoration activities, it does require a significant long term commitment to be effective.

Fortunately, beaver management fits the mandate of a number of organizations whose mandate is to promote trapping and "on the land" programs. Funding partnerships and coordination are a definite possibility.

Photo courtesy of Brendan Connors, 2017

Capacity and Resources to Carry out Stock Restoration

A lack of resources and capacity has contributed to limiting progress on stock restoration in the Yukon. It is broadly recognized that stock restoration is a long-term process and that in order for it be successful there needs to be a long-term commitment to supporting it (i.e. at least several population cycles). Many First Nations and communities have engaged in various forms of stock restoration in the past, however, some projects had to be terminated when individual champions for them had to move on or when financial resources became scarce.

Many First Nations and communities expressed a need for greater support in identifying and planning stock restoration activities from groups like the YSSC and DFO, as well as a desire to see a coordinated approach to securing and funding activities from organizations with obligations, mandates or interests to support salmon restoration and management (e.g., hydro electric generation, mining companies, DFO, and the Yukon River Panel R&E fund). To achieve stock restoration goals, long-term funding based on longer-term planning and prioritization, is needed to help establish and maintain the projects. Many First Nations have other pressing priorities including resource development and harvest. As a result, with limited human and financial resources, stock restoration is often not the highest priority.

A number of First Nations and communities emphasized the importance of continued educational activities focused on the ecological and cultural value of salmon, especially among youth in the communities. These activities, which include salmon in the schools and Tr'ondëk Hwëch'in First Fish camp, have played an important role in ensuring knowledge of salmon and the fish camp culture is passed on to the next generation. It was suggested that a spring hunt, trapping, and the proper use of beaver (both meat and fur), could build on the successes of cultural camps and be one way to build capacity and knowledge in communities to support beaver management.

Photo courtesy of Brendan Connors, 2017

Harvest Management

Stock restoration is only one of several activities that can be taken to help recover depressed salmon populations. Harvest management, both within the Canadian portion of the Yukon as well as Alaska, is arguably the most important management lever to be pulled when salmon populations are depressed. This is because harvest is under human control and directly affects the number of adults that make it back to the spawning grounds. Many First Nations and communities are very aware of the need for careful harvest management and have gone to great lengths to limit or cease fishing.

In recent years some First Nations have begun managing their respective stocks by developing community harvest management plans that establish harvest recommendations for their citizens. These recommendations include releasing females that are caught, gear restrictions (i.e. one net and net length), sharing harvest, and focusing efforts on community education campaigns about the need for harvest restrictions. These efforts continue to be seen as important activities for First Nations to undertake in an effort to ensure salmon continue to return to the Yukon for decades to come. There was also recognition of the importance of continuing to work with the YSSC to communicate with Alaska tribes and management agencies the lengths First Nations have gone to limit harvest in the Yukon.

Conclusions

Declines in Chinook abundance and survival are not unique to the Yukon and instead are shared across much of central and western Alaska suggesting that the factors responsible for the currently depressed populations of Yukon Chinook are, at least in part, driven by parallel factors and processes outside of the Yukon Basin. This highlights the importance of recognizing that recovery of the Chinook in the Yukon appears to depend, at least in part, on improvements in marine conditions.

The success of restoration actions depends in large part on the extent to which they address known factors that limit Yukon Chinook populations. Success also depends on the capacity of groups that are engaged in the restoration effort to see the restoration action through; many restoration actions can be expensive and require numerous years of effort. In light of this it is critical that actions that are taken are community driven, planned and reflect the priorities of those depending on the fish stocks, and match the resources and capacity communities have to see them through.

Outside of beaver and obstruction management there are only a few First Nations that are in a position to design and implement their own stock restoration efforts. In most cases, this will also require the assistance from outside consultancies, which increases costs and can take some control and decision authority away from the communities and First Nations governments. Stock restoration activities that are small scale and community driven are more likely to succeed even if they make a small contribution to overall abundance. The community engagement, capacity development and stewardship benefits are essential.

There is inconsistency in funding available through the Yukon River Panel's Restoration and Enhancement fund. While stock restoration has been identified as a priority for the fund, these priorities change over time, are sometimes lacking in definition or bi-lateral consensus. DFO has provided valuable support for stock restoration through the Salmon Enhancement Resource Restoration Unit.

Photo courtesy of Peter Mather, 2016

Recommendations

Given current priorities of Yukon First Nations and communities, as well their varying resources and capacity, the YSSC should focus efforts on supporting community identified and led stock restoration activities.

Build Connections and Capacity

- This support should include helping to identify funding, non traditional partnerships (i.e. industry, trapping organizations), connecting individual restoration projects with technical expertise, critical evaluation of the goals of the restoration actions and likelihood of success, and emphasizing the important role of monitoring and assessment to evaluate the performance of restoration actions.

Match Support to Needs

- Attempt to provide stock restoration support to First Nations and communities that matches their level of knowledge and capacity. For example, some First Nations may require more general information to inform them of stock restoration possibilities and others may want more detailed project planning information. In either case, the First Nation government would need to request the support of the YSSC and invite them to participate or support any local stock restoration activities or initiatives.

Support Beaver Management

- Almost all First Nations and communities identified beaver activity in flow sensitive streams as a potentially important factor limiting access to high quality spawning habitat and impeding upstream juvenile migrations. The YSSC should support First Nations and communities in the development and implementation of beaver management plans that are community driven and match the resources and capacity communities have to see them through. This support should involve the development of strategic approaches that include the systematic classification of stream vulnerability to beaver activity (e.g., based on Chinook spawning distribution, sensitivity to low flows, and beaver distribution) so that efforts are focused on those systems where Chinook are most likely to be affected by beavers. Coupling beaver management with the targeted monitoring of juvenile Chinook densities and occurrence of spawners upstream of beaver dams in select systems that beaver management has, and has not, occurred in would enable to success of beaver management to be evaluated. Developed shared training and best practices information on beaver and obstruction management approaches. Dialogue with the Renewable Resources Councils, Yukon Fish and Wildlife Management Board and Environment Yukon as it relates to trapping should also be encouraged.

Support Harvest Management

- Support for First Nation harvest management planning should continue to be the top restoration priority for the YSSC and be recognized as a critical overarching part of any specific stock restoration effort. As First Nations and communities develop community based management plans the YSSC should also play a supporting role in communicating these efforts across Yukon First Nations and communities as well as to the Yukon River Panel and communities who also depend on salmon along the Yukon in Alaska.

Engage Recreational Anglers

- While there is currently no public recreational fishery for salmon on the Yukon River, there should be an effort to include and discuss stock restoration initiatives with recreational anglers and other interests (i.e. Yukon Fish and Game Association and the Wolf Creek restoration project).

Photo courtesy of Brendan Connors, 2017

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For more information about this project please see the full technical report:

Connors, B.M., A von Finster, J. Gustafson, M. Bradford, J. Trerice, D. Zimmerman, H. Wright, and N. Tamburello. 2016. Yukon Chinook Stock Restoration Initiative: Technical Team Year 1 Final Report. 136 pp.