

CHUM REBUILDING WORKSHOP – SUMMARY REPORT

PURPOSE: TO SHARE INFORMATION AND TO DEVELOP A SET OF PRIORITY ACTIONS AND STRATEGIES TO SUPPORT THE REBUILDING OF CHUM SALMON POPULATIONS.



Photo: Select workshop participants at close of session on Day 2.

Dates: February 10 & 11, 2025

Organized by: Yukon First Nation Salmon Stewardship Alliance and the Council of Yukon First Nations



**Council of Yukon
First Nations**

Acknowledgements:

We would like to thank all the Yukon First Nation Government representatives on the Yukon First Nation Salmon Stewardship Alliance (YFNSSA) that contributed to planning this workshop and all the participants that attended the workshop. Your knowledge, expertise and passion for Yukon River chum salmon was very much appreciated.

Participants:

Day 1

Adam O'Dell (DFO)
Ben Schonewille (EDI)
Bruce Leaman (COSEWIC)
Cathy Merkel (DFO)
Christine Grams (CYFN)
Devin Wittig (KFN)
Elizabeth MacDonald (YFNSSA/CYFN)
Emma Hoogland (KDFN)
Gillian Rourke (TTC)
Hannah Currie (KFN)
Huey O'Leary-Baikie (TH)
Jaclyn Kendall (DFO)
Katherine Peter (VGFN)
Kim Koyczan (TKC)
Matty Mead (TSSWS)
Marina Milligan (YFNSSA/CYFN)
Petra Szekeres (EDI)
Paul McCarney (VGFN)
Stan Njootli Sr (YSSC)
Stephanie Lyons (YFNSSA/CYFN)
Taylor Bradley (YSSC)
Wes Moir (YFNSSA/CYFN)

Day 2

Adam O'Dell (DFO)
Ben Schonewille (EDI)
Bruce Leaman (COSEWIC)
Cathy Merkel (DFO)
Christine Grahams (CYFN)
Elizabeth MacDonald (YFNSSA/CYFN)
Emma Hoogland (KDFN)
Ewa Holender (Ratcliff lawyer)
Gillian Rourke (TTC)
Hannah Turner (YFNSSA/CYFN)
Huey O'Leary-Blaikie (TH)
Jaclyn Kendall (DFO)
Katherine Peter (VGFN)
Jeffrey Nicholls (Ratcliff lawyer)
Kim Koyczan (TKC)
Matty Mead (TSSWS)
Marina Milligan (YFNSSA/CYFN)
Mike Bradford (COSEWIC)
Petra Szekeres (EDI)
Rebecca Freeman (LSCFN)
Stan Njootli Sr. (YSSC)
Stephanie Lyons (YFNSSA/CYFN)
Taylor Bradley (YSSC)
Wes Moir (YFNSSA/CYFN)

Facilitator: Scott Keesey (UpWind Resource Consulting Services)

Day 1: Setting the Context and Exploring Issues

Welcome & Workshop Objectives

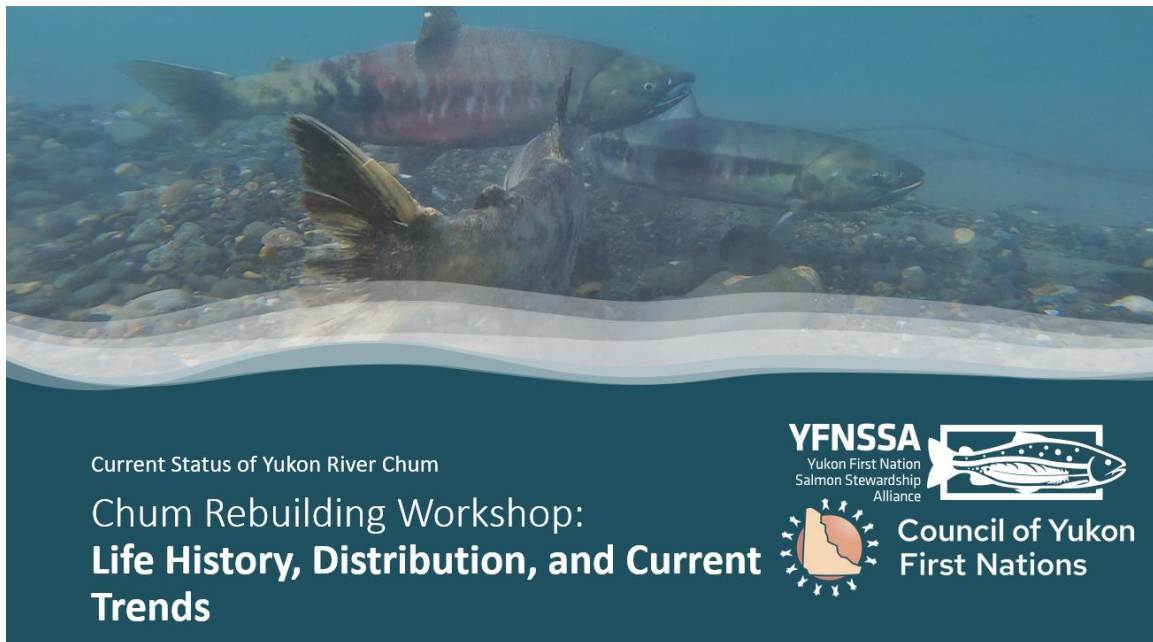
The overview and intentions of the workshop were shared with attendees briefly, including the goals and the structure of the two days. Guiding questions for the Day 2 breakout session were shared with participants to start them thinking about chum salmon support needs and potential actions.

Introductions & Chum Stories

Attendees introduced themselves and were asked to share personal stories and connections to chum salmon. Experiences with chum were varied, with some participants never having seen a chum and some participants who harvested numerous chum over decades of harvesting. Chum were noted for their impressive super redds, their connections to language and culture and their toughness. Participants also spoke to the connection chum have with the ecosystem and the importance of feeding many species like humans, bears and dogs.

Session 1: Chum Life History & Habitat

Presentation: Overview of chum life cycle – Marina Milligan (YFNSSA/CYFN)



Summary: Yukon River chum belong to the fall chum ecotype, which prefer to spawn in side-channels and sloughs. After emergence, fry head directly to the ocean, where they spend 2-5 years in the Bering Sea feeding on an assortment of fish and invertebrates. Yukon River chum appear to be most abundant in the Southern Bering Sea, crossing below the Aleutian Island chain. Increasing ocean temperatures have both direct and indirect effects on chum. For marine juveniles (in their first summer at sea), warm water has been linked to stomachs that are less full, switching to lower quality prey, and poorer body

condition, however, it is still unclear if these negative effects influence future survival. Each year NOAA conducts a juvenile chum index survey, which does not appear to be a good predictor of survival to adult age for chum. Chum salmon seem to be influenced by things that happen later in their ocean stage than Chinook.

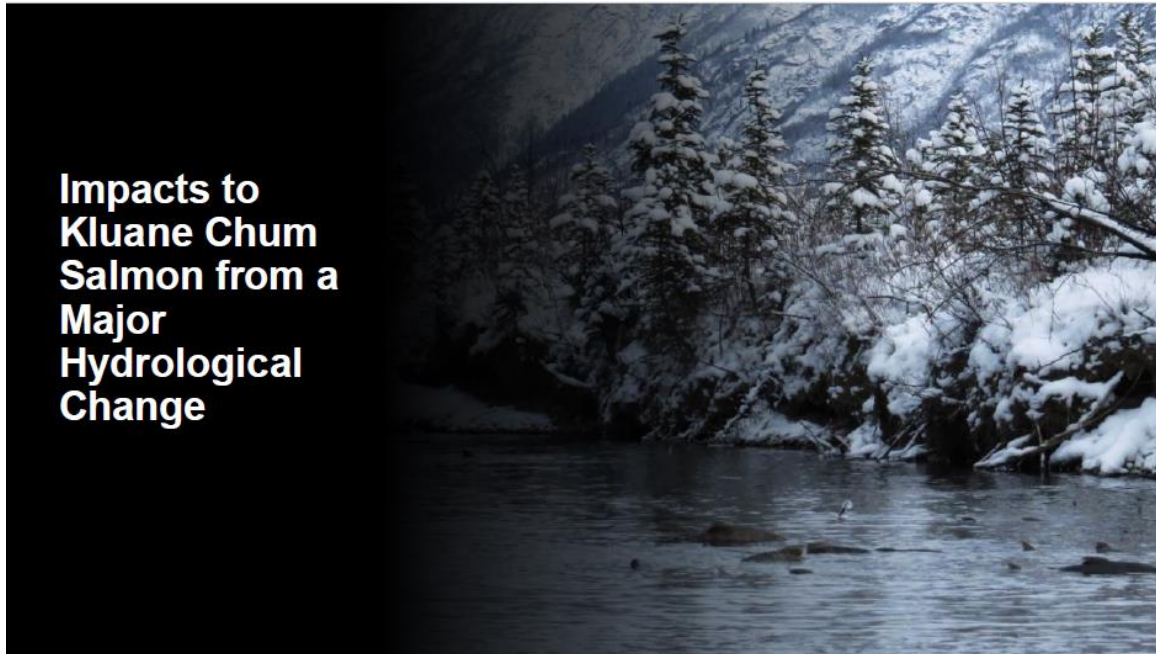
While Chinook returns have been declining slowly over time, the number of chum salmon returning to the Yukon River has dropped dramatically in recent years. In addition to having fewer salmon return to the mouth of the Yukon River, the proportion of chum bound for Canada is also decreasing. This suggests that Canadian origin chum are experiencing pressures not found in the lower river. The result is that treaty goals are not being met. The Mainstem Yukon and Fishing Branch Rivers saw, on average over the past five years, a third and a quarter (respectively) the number of salmon needed to maintain a sustainable population. The chum salmon that do return to spawn are slightly smaller than they were historically, likely due to changing ocean current and temperature patterns. Chum spawning areas have been poorly documented, and many minor streams have no recent spawning records. It remains to be seen if chum salmon are still spawning in these systems.

Key Discussion Points:

- Chum salmon play a key role in nutrient cycling.
- The 2025 chum forecast is poor.
- There's a systemic problem with salmon populations.
- Emerging theme: The system is complex, and we have a substantial lack of understanding of spawning and returns, outmigration, etc.
- We assume warming ocean conditions are driving low chum returns, but that is unproven.
- Chum salmon abundance dipped in the '90s, would be good to compare to ocean temperatures.
- An acknowledgement that we need to have more chum returning to the rivers.
- We need to advocate for key locations (like spawning grounds) to ensure they continue to return.
- More conservative management actions will be needed.
- Can we do more genetic work to define the run? Can we get samples?
- Variability in Fishing Branch River (FBR) emergence timing due to temperature regimes (groundwater influences).
- Is there a way to infer historical distribution and densities in sediments or tree cores?

Session 2: Case Examples of Change and Restoration

Presentation: Slims River Piracy Effects, Adam O'Dell (DFO)



Summary: The Kluane drainage is an important area for chum salmon spawning. Since 2016, water from the Kaskawulsh Glacier now flows into the Alsek drainage. This has resulted in lower flows into Kluane Lake (1.7m drop). This hydrological change has affected chum spawning habitats in and downstream of the lake. It is difficult to determine if this change has affected the survival of chum due to the chum crash. While it is possible that Kluane chum have been impacted by this change, the data isn't conclusive. In a few more years, the effects of the diversion might become more apparent.

Key Discussion Points:

- Questions about habitat on Yukon River mainstem vs. Kluane River but answers inconclusive due to limited investigation effort.
- Reference to large juvenile chum found in lake trout stomachs around the time of Slims River reversal, but no new reports since.
- Concerns were expressed over freshwater predator species killing chum fry. There are 'gauntlet areas' that might be devastating for outmigration.
- Silver City is an ideal spot for restoration because shore gravels entice spawning.
- Investigations and surveys in this area are 'side of desk' by DFO. Not much funding for this.
- Current assessments include genetic apportionment at Eagle sonar and aerial surveys.

Ni'iinlii Njik (Fishing Branch River) Dewatering Investigations and Restoration Work

Presented by:
Katherine Peter, Harvest Support & Fisheries Coordinator (VGFN)
Petra Szekeres, Fish Biologist (EDI)



Summary: Ni'iinlii Njik (Fishing Branch) is important to Vuntut Gwich'in and was protected as part of their Final Agreement. Chum salmon spawn in Ni'iinlii Njik and fish traps were used to catch them for a millennia, however in recent times chum numbers have been reduced to a fraction of their former size. Vuntut Gwich'in First Nation (VGFN) is studying an area that naturally dewateres during late winter/early spring. In 2022 the dewatered area extended considerably downstream. Frozen eggs, fish and small pools of numerous fish were found. The water levels can change in a day from a dry river to freshet. VGFN will continue to monitor water level, dewatered extent and imagery. A funding request for restoration was submitted to help answer questions and explore options, such as restricting chum from dewatered areas.

Key Discussion Points:

- When water returns, it's like 'freshet overnight' – ferocious return, and full flows within a week every year.
- Coarse hydrology data currently doesn't explain dewatering.
- Proposals to test some alternate hatchery and incubation strategies.
- Area is permafrost dominated, so it's not abnormal to have no winter flow in streams and rivers.
- Limited support for chum exclusion fence proposal a few years ago, but also not enough 'push'.
- Lessons learned that could apply to other areas include:
 - Use of time-lapse cameras can be useful to assess for dewatering in other areas.
 - FLIR cameras and mapping could identify groundwater discharge areas (some may have been done in Kluane area).

Session 3: Chum Management Overview

Presentation: Chum Management Overview - Marina Milligan (YFNSSA/CYFN)



Summary: In Modern days, Yukon River chum salmon management hinges on the Pacific Salmon Treaty and Yukon River Salmon Agreement signed between U.S. and Canada, which established Yukon River Panel. The panel makes recommendations on salmon conservation and management to U.S./Canadian agencies and sets Canadian origin spawning goals. There are numerous challenges with this framework. The response to declining chum run is slow, perpetuated by disagreements between the U.S. and Canada. There has been limited integration of traditional knowledge into the process, and there are no consequences when the agreement is not met. Assumptions made around harvest leads to high uncertainty in the true number of Canadian-origin chum captured in U.S. fisheries. The blanket assumption that 25% of all fall chum captured in the U.S. are Canadian fails to account for spatial and temporal variability in the composition of harvest. Instead, it treats harvest in the lower river (~25% Canadian), the Tanana (0% Canadian) and at Eagle (100% Canadian) and elsewhere as equal contributors to Canadian harvests. Meanwhile in the Porcupine River, harvest shares for Canadian-origin chum are not specified.

Marine catch of chum salmon is primarily governed under two fisheries- offshore trawl fishery and Area M intercept fishery. In the Bering Sea and Aleutian Islands fishery, chum salmon are caught as bycatch during pelagic trawls targeting pollock. At present there are no chum bycatch restrictions; however, a review of this fishery is underway. Between 2011 and 2022, the impact of the trawl fishery on future chum returns was generally low (less than 1%) but peaked at 5% in 2021. Several recommendations to limit chum bycatch are currently being reviewed by the North Pacific Fisheries Management Council and may be adopted in coming years.

In contrast the Area M Intercept fishery, operating near the Aleutian Chain, uses purse seining and gillnets to target sockeye. Unlike the trawl fishery, intercepted chum salmon can be retained and sold. The impact this fishery has on Yukon River chum is unknown due to a lack of age analysis and genetic testing. A limited genetic testing program run from 2007 to 2009 suggests a relatively low proportion of Yukon River chum are captured; however, a lack of age analysis means no adult equivalency estimates can be produced. This fishery could be capturing larger, older, individuals than the pelagic trawl fishery.

Key Discussion Points:

- Marine dynamics are a huge gap for chum – unknown distribution and effects of competition with hatchery salmon.
- More discussion about the intercept fishery at the international level would be helpful.
- Management is very complex with many different factors, and recommendations aren't always accepted.
- Salmon hatchery numbers are often vaguely referenced but largely unknown.
- Challenges are immense in chum management with substantial unknowns. Recognition again that this is managing people more than salmon.
- Lack of consequences for overfishing within agreements is frustrating.



Photo Credit: Peter Mather

Day 2: Tools, Strategy, and Prioritization

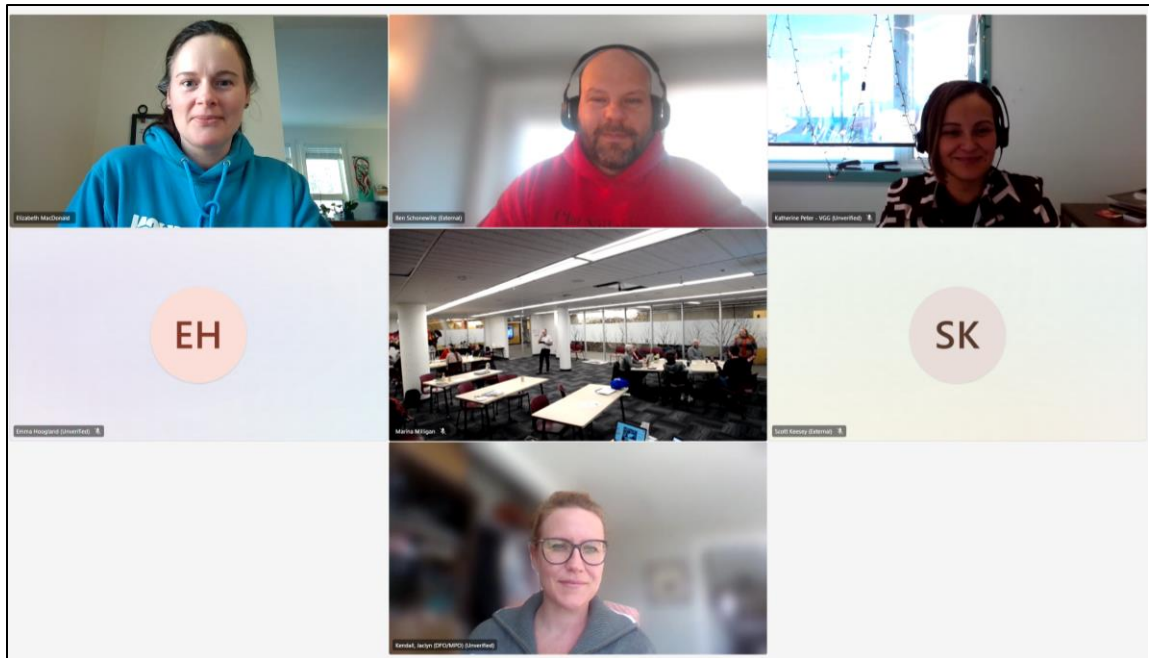


Photo: Online workshop participants during Day 2 breakout group sessions.

Session # 4: Tool Presentations

Presentation: Exploring Options of an Emergency COSEWIC Assessment – Stephanie Lyons (YFNSSA/CYFN)



Summary: An emergency listing is a special process that could be used to help protect Yukon River chum salmon, whose numbers are currently critically low. This process

speeds up the usual assessment timeline—from 3 to 5 years down to just 3 to 6 months—when a species is facing a serious and immediate threat of disappearing. However, there are challenges. While this tool is meant to act quickly to prevent extinction, the Department of Fisheries and Oceans (DFO) assessment process for chum salmon will still take several years. Another complication is that there are significant gaps in data, making it difficult to prove the species is at immediate risk of extinction. If chum salmon are emergency listed, it could affect First Nations' ability to manage their fisheries and continue cultural harvesting practices. Once a species is listed under the Species at Risk Act (SARA), it can take many years to remove it, even if the population improves. Emergency listing is a powerful tool to protect species in crisis, but it must be carefully considered as habitat protections comes with the concession of Yukon First Nation's right to manage their own fisheries.

Presentation: Species at Risk Act (“SARA”) and First Nations Harvesting Rights – Ewa Holender and Jeffrey Nicholls (Ratcliff)



Summary: Ratcliff (lawyers) will provide a MEMO of legal advice to CYFN regarding the potential impacts to First Nation's harvesting rights. Harvesting rights can be restricted for conservation concerns under Final Agreements and the Yukon River Salmon Agreement (Pacific Salmon Treaty). Under SARA, harvesting rights can be limited IF reasonably required for conservation. There are requirements for consultation before listing a species under SARA.

Key Discussion Points (from both SARA presentations):

- There are challenges with an emergency listing – impact on traditional harvesting rights, bureaucratic delays, uncertainty around benefits, and time to delist a recognized species.
- Species at Risk funding is not easy to administer.
- When developing management plans, ensure that the items are achievable otherwise the restrictions won't be lifted even if the species has recovered.

- A clear definition of conservation is needed, as it's different under UFA vs. Fisheries Act.
- Needs to include a plan for protections in the oceans (US jurisdiction).
- Species at risk designations within one country don't apply in another country (US vs. Canada).
- Suggestion from Stan that getting buy-in from First Nations on harvesting approaches is most valuable action, with key timing agreed upon for closures etc.
- SARA listing hasn't been used for Chinook – participants are leery of the bureaucratic requirements and knock-on effects. That same reluctance is expressed in respect to chum.
- Chum can be protected without a SARA listing – domestic advocacy for changing the mining act, restoration activities, filling data gaps – and de-listing is very hard.
- SARA and Federal Listing decisions are distinct steps. Government decision making with SARA listing is still a lengthy process, so the overall Emergency Assessment may not be a shorter process overall, even if the SARA process is shorter.
- Provisions can be included in the SARA listing to allow First Nation cultural harvest

Presentation: Instream Incubation in the Yukon River Watershed from 2016 to Current and Potential Applications for Chum Salmon Restoration; Applications, Lessons Learned and Limitations – Ben Schonewille (EDI)

Instream Incubation in the Yukon River Watershed from 2016 to current and potential applications for chum salmon restoration

Applications, Lessons Learned and Limitations

Ben Schonewille, BSc. [RPBio](#).

February 11, 2025



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Summary: Ben provided an overview of the instream incubation projects they have participated in; including partnerships with Teslin Tlingit Council (Morley, Deadman, Nisutlin), Tr'ondëk Hwëch'in (Klondike), Kwanlin Dün First Nation (Ibex, Wolf, Michie) and Vuntut Gwitchin First Nation (Fishing Branch). Instream incubation is done by collecting fertile female and male salmon, taking the egg and milt (sperm), fertilizing the eggs and putting them back into the river. This can be done with containers or directly into the gravels with a pipe. Depending on the method, the hatched salmon can swim out of the container or must be retrieved and released in the spring. It is labour intensive to construct the redds and is dependent upon having enough fertile salmon. Ben believes instream incubation is best to introduce salmon back to previous habitats. It becomes a numbers game when it is considered to increase existing stocks. Noting that wild survival isn't known, it is assumed that this method might only increase survival by 1%. However, if the spawning grounds are dewatered, instream incubation could significantly increase survival.

Elizabeth provided a short summary of the Hatchery workshop hosted by YFNSSA/CYFN in 2023. The workshop was to discuss if hatcheries (including instream incubation) should be considered and was not a yes/no conversation. Experts from DFO and the Pacific Salmon Foundation spoke to how it was important to have a good plan that considered more than just a hatchery and included when to end the hatchery intervention. Elizabeth was surprised at how many participants thought hatcheries might be OK on a temporary basis. It was stressed that we can't give up and had to keep working to rebuild salmon populations.

Key Discussion Points:

- Timing of egg collection and selecting planting location for survival is critical.
- Several authorizations are required to do instream incubation, so it requires planning.
- 2023 YFNSSA workshop on hatcheries as a restoration tool.
 - Be clear on your objectives.
 - Can't be the only thing in your plan – plan needs to include how the hatchery won't be needed anymore.
 - Hatchery salmon are better than no salmon, but better on a temporary basis.
 - Acknowledgement that there is limited capacity.

Session # 5: Strategy Development

Breakout Group Session 1: Identifying Needs

In the afternoon, attendees were divided into 3 breakout groups – Groups 1 and 2 in the meeting room, and the third group online. Each group assigned a recorder/facilitator for their group. In the first session, groups were asked the following questions:

1. What are the needs to help chum? (Data/information, advocacy, etc.)
2. Which of these needs are highest priority?

Breakout group raw notes are in Appendix B. Following is a compiled list of the highest priority identified needs from the groups, categorized by type:

- Filling data gaps around chum salmon – improving understanding of life history, habitat use, population pressures and stressors, and traditional use.
- Advancing education/outreach efforts – raising awareness of chum importance and critical status.
- Maintaining cultural aspects and traditional lifestyles.
- Continuing and improving advocacy work.



Beaded by Stormy Bradley

Table 1. Prioritized needs identified to rebuild the Chum population in the Yukon.

Need	Category
Data/information needs	Habitat status/mapping, dewatered zones
	Harvest data
	Spawning distribution
	Groundwater and critical habitats mapping
	Wild hatching success rate
	Run timing
	Increasing genetic identifications (baseline data) particularly for ocean bycatch
	Emergence timing
	Prey availability
	Literature review/jurisdictional scan – consolidate what we know already
	Monitoring resources – people
Chum Relationship/Traditional Lifestyle	Education
	Public outreach
	Cultural connections such as maintaining chum relationships while fishing alternative species, creating fish traps, etc.
Advocacy	Advocacy at management tables/more regulations put in place
	International agreements/buy in
	Capacity/funding
	Gather organizations and decision bodies to discuss chum

Breakout Group Session 2: Generating Actions

In the second working session, the same three groups were asked the following questions, to build from the needs identified in the first working session:

1. What actions could support the priority needs? Who is best positioned for this action?
2. What are some obstacles that may need to be considered?

Raw notes from the Breakout Groups for this session are in Appendix B, and following is a compiled list of potential actions identified that participants in the three groups developed to address the needs from Session 1. Suggested leads and potential barriers and challenges are identified for some actions.



Photo: Breakout group considers needs and priorities for chum salmon.

Table 2. Strategic needs and actions identified for Yukon River chum salmon.

Priority Needs	Actions	Potential Leads	Notes
Knowledge Gaps	Map chum salmon habitat: <ul style="list-style-type: none"> • Spawning Locations (that don't de-water). • Critical Habitat. • Groundwater discharge locations. • Relate FBR elevation gradient and other surveys relate to dewatering. 	Habitat WG (or separate chum Habitat WG) YukonU FBR Working Group GeoYukon	Could be outside field season. Timelines of proposals are difficult (lag time and sequencing).
	Conduct knowledge surveys to determine historic distribution of chum. Determine if chum are still in these areas.	YFNs	
	Advocate for accurate reporting of US harvest of Canadian-origin fall chum.	Yukon River Panel/ADFG	
	Advocate for reduced incidental harvest of Canadian-origin fall chum including the use of selective gear.	YFNS	
	Determine chum run timing. Currently several sonar projects are pulled before the end of the run due to winter conditions.	DFO/First Nations	
	Collect genetic samples to improve the chum genetic baseline. Ensure Yukon chum are distinguishable from other chum populations in the Bering Sea.	YFNs, DFO, YFNSSA	
	Determine juvenile emergence timing.	YFNs and RRCs	
	Determine hatching success rates.		
Study chum salmon diet in both freshwater (juveniles) and ocean (immature-adult) to determine their food availability and quality.	Marine: NOAA/ADFG, UofA Freshwater: YukonU		

	<p>Create a centralized database or Data Hub to document and share chum data.</p> <p>Conduct a literature review and develop a summary report, including summary infographics, that highlight key data gaps and research needs.</p> <p>Incorporate chum data needs into existing initiatives, including the Chinook rebuilding/strategy plan – so it can be referred to in funding applications.</p>	<p>Collaborative – DFO, YFNs, YSSC, and others</p> <p>YFNSSA/Chu Niikwan Gyo Salmon Stewardship Centre</p>	<p>Capacity (few chum experts) and funding.</p>
	<p>Develop prioritized lists of research needs to guide parties embarking on salmon research in communities.</p>	<p>YFNSSA/JTC/YFN</p>	
	<p>Collect all knowledge of chum salmon in a map-based document that covers knowledge by life history stage. Preferably paired with TK but it could be a standalone science document. Refer to TTC 's efforts for Chinook.</p>	<p>YFNSSA/YFN</p>	
	<p>Publish a summary of this workshop so that funding proposals can show how chum work fits into a larger strategy. This should increase success of funding.</p>	<p>YFNSSA</p>	<p>none</p>
	<p>Traditional Lifestyles and Cultural Connections</p>	<p>Host fish culture camps to maintain chum relationships and support for salmon restoration.</p>	<p>YFNs</p>

			on the chum)
	Conduct traditional knowledge interviews to preserve knowledge.	YFNs	Funding Intellectual property rights
	Strengthening chum connections through: <ul style="list-style-type: none"> • Education, storytelling, potlucks • Purchasing salmon for food • Creating fish traps • First chum ceremonies • Land Guardian and FN involvement in field work 	YFNs	
	Host workshops on traditional practices , such as building fish capture devices (fish traps, handmade nets, etc.).	YFNs	
	Integrate traditional practices with western practices (fish traps for broodstock collection).	YFNs and Consultants	
	Document bioindicators of salmon arrival (flowering plants, storms, wasps) and create a social media post.	YFNSSA	
	Facilitate safe spaces to learn on the land (education).		
	Encourage connections with salmon beyond harvest activity. Promote connections based on career, art, net tying etc.	YFNs	
Education & Advocacy	Social media campaign. Add to current ice bear series by Peter Mather. Share information on the impacts of river piracy on Kluane chum salmon.	First Nations, CYFN/YFNSSA, Raising the profile WG (add chum in or duplicate) Yukon Wildlife Viewing (do ones on chum salmon)	Sheer volume of information and popularity Targeted Audiences – find experts

<p>Lobby for salmon, at Washington and Ottawa.</p>	<p>YFNs, YSSC, Feds or other gov't</p>	<p>Education needs to come first, so the problem is clear – otherwise there will be no support</p>
<p>Promote Salmon Education</p> <ul style="list-style-type: none"> • Create signage for salmon habitat. • Create infographics and summaries of salmon run strength. • Support Land Guardian involvement with salmon. • Support youth leadership programs, including To Swim and Speak with Salmon. • Host salmon walks to increase public awareness of salmon. • Give presentations on salmon and salmon management to educate Yukoners (University and schools). 	<p>YukonU, YFNSSA, YSSC, Renewable Resource Councils, YCS, Environment Yukon, TSSWS, All</p>	
<p>Strengthen international agreements.</p>	<p>Yukon River Panel</p>	
<p>Find opportunities to get youth involved with research to increase exposure to salmon.</p>	<p>All</p>	
<p>Coordinate exchanges between communities and projects to increase knowledge sharing.</p>	<p>All</p>	
<p>Promote key salmon messages:</p> <ul style="list-style-type: none"> • Explain the Chinook 7-year moratorium in a way people understand. • Communicate with public over why chum numbers are low. • Keep public in the loop about the actions that are being taken (rebuilding workshops, 7-year agreement etc.). 	<p>All with a role in education</p>	
<p>Foster meaningful youth involvement with salmon:</p>	<p>All, TSSWS, DFO/YG</p>	<p>Funding</p>

	<ul style="list-style-type: none"> • Connect with youth organizations (To Swim and Speak with Salmon, Y2C2, boys and girls club, moving mountains). • Teach To Speak and Swim with Salmon about chum. • Organize mock trials to have youth determine how to manage salmon (or draft a salmon management plan). Bring these back to managers. • Create salmon art of salmon in the schools. • Use freshwater fish like late trout, char, or grayling in classroom rearing programs to reduce impact on salmon (salmon in the classroom). 		
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Overarching Obstacles identified (non-specific to actions):

- Funding and capacity are big barriers
- Logistics and remote locations
- US Administration
- International considerations
- Data sharing
- Public Perception
- Need fish for restoration (to make fish)
- Burnout from focus on Chinook/climate change
- Identifying actions with the greatest impact
- Forest fires
- Landslides
- High/low water levels
- Harvesting in Alaska
- Outdated mining legislation

Summary of Findings, Next Steps, and Final Reflections

Possible next steps and responsibilities

The closing discussion keyed in on a few actions and how they could be initiated. Outreach/education regarding the importance and status of chum was featured prominently. Funding sources were discussed for non-research initiatives, including philanthropists, foundations, and grants (Weston Family Foundation), however, a collaborative approach would be needed for these applications – not a single applying body. YFNSSA also has a spreadsheet of funding sources to consider.

To Swim and Speak with Salmon (TSSWS) has a mandate to create a strong, holistic understanding of salmon among a group of youth who live along the Yukon River in Alaska and the Yukon, and to build leaders in the process. TSSWS representative Matty Mead has a strong interest in advocating for many identified actions with the organization and would benefit from summary information to share. They have creative members who may be able to contribute to initiatives identified in the workshop. Follow up with TSSWS is strongly encouraged, and a report back from TSSWS could be requested.

Mapping was repeatedly identified as a way of presenting information. Securing mapping support for a variety of these actions could be key to advancing the sharing of critical messaging. The integration of western mapping and cultural connections in the form of a 'storymap' (could be shared with other salmon species) was raised as a valuable way to share information. An example was the story of the chum at Fishing Branch River and for Kluane River chum.

A project involving the building of traditional fish traps to use in the brood stock collection on the Fishing Branch River was discussed. Logistical challenges (transportation, trap type vs. collection location) may prevent the practical implementation but could be very valuable at integrating First Nation approaches into restoration efforts.

A suggestion was raised to enlist youth to mock a salmon management exercise, to both engage youth and to solicit new solutions to problems. An appropriate level of preparation (enough, but not too much) was identified as being key to the success of such an exercise.

Hope was expressed for the Salmon Stewardship Centre as one option to support chum data sharing through a 'hub' or database. There are questions around how that would be organized and hosted. The Pacific Salmon Foundation's Salmon Explorer was raised as something to consider when scoping this project. Yukon River Panel also has a map-based interface for Restoration and Enhancement funded reports. Capacity and funding were identified as challenges to this action, as with most actions identified, and concern was expressed about duplication of effort.

Many needs, actions, and gaps identified mirrored those already being addressed for Chinook salmon. It was frequently suggested that actions/solutions be integrated with Chinook initiatives for efficiency.

Sharing Circle and Closing Thoughts

Closing thoughts from the session included:

- Gratefulness for the opportunity and the information, and for being included in the discussion.
- Charisma of the chum salmon.
- Hope for the work required despite the substantial challenges identified.
- Appreciative of the space and time to develop and pursue ideas.
- Discussions were grounding for participants who work in technical details.
- Excitement to share findings with colleagues.
- The collaboration of First Nations, scientists, advocacy groups, and youth is encouraging.
- The session helped to 'illuminate the tunnel'.
- Harkened back to Roddy Blackjack's relentless focus on salmon during the Umbrella Final Agreement Negotiations, and the inclusion of Chapter 16 at the final stages of the negotiations.
- Let's look for efficiencies with ongoing work with Chinook salmon – approach work with a 'salmon' perspective, not species specific.
- Youth representation at the session was inspiring for those who have been in the field for years.

Appendix: Breakout Group Notes



Photo: Peter Mather

Session 1 (Identifying Needs), Group 1:

Session 1: What are the NEEDS to help Chum? Which are highest priority?

- wild hatching success rate?
- Alaska harvest

Information/critical habitats

- ↳ GW mapping - daylighting
- consolidating information → FISS
- spawning populations.
- TK
- genetic data
- run timing

- International by-in + agreements (7 yr no fishing)
→ leave fall chum

- public awareness ^{why they matter + personal connection}
- Yukon status

- harvesting - stop all fall chum harvesting in Alaska
- understanding of international farmed fish competition
- competition with other fish
- by-catch in marine commercial fishery

- Combine overlapping effort w/ Chinook + redesign research programs
- capacity for combining field research efforts
- understanding FBR dewatering

- mapping habitat in Kluane

- redesign research program in Kluane

- continue + expand resources + efforts

- get together organizations + bodies to pull resources together

- Knowledge Sharing

- funding

- include YG

Session 1 (Identifying Needs), Group 2:

SESSION 1: WHAT ARE THE NEEDS TO HELP CHUM?

WHICH ARE HIGHEST PRIORITY?

- data/monitoring/knowledge

- time of emergence (fall & summer)
- habitat assessment
- food availability

→ what can we learn from the past?

- what do we already know?
- how can we update this information?
- · literature review of what we know, combine w/ discussions with knowledge holders
- Don't get stuck in a Western worldview
 - reconnecting to Chum through ceremony etc.
- Advocacy
 - local, bilateral, international (beyond Alaska)
 - prioritizing in our own organizations

→ education

- history → advocacy
- key for youth to understand the salmon situation → feeling included
- salmon need certainty
- mapping de-watered zones
- holistic/whole system view.
- harvest management
 - advocacy pieces (marine & in river)
- Difference between things we CAN impact vs things we can't
- Research in river
-

Session 1 (Identifying Needs), Group 3:

Elizabeth MacDonald

Traditional Life style alive

Alternative fishing/salmon options
creating fish traps

Being on land

Elizabeth MacDonald

Habitat Status

Knowledge gap for spawning outside of FBR

Watchful eyes (not enough people out looking at this time)

Elizabeth MacDonald

Spawning distribution - not well known (still in past areas and what are established areas)

Elizabeth MacDonald

Use Chinook work to adapt to chum.
(Expanding focus rebuilding work)

Elizabeth MacDonald

YRP
develop harvest shares for Porcupine chum

Elizabeth MacDonald

Salmon Management plans
takes time and need to hire consultants

Unknown User Elizabeth MacDonald

Awareness of chum for all

Elizabeth MacDonald

Other ways to collaborate with Alaskans - outside of YRP

Elizabeth MacDonald

Harvest Data (ocean, Alaskan and Canada)
Need for total run and spawner recruit goals

Session 2 (Generating Actions), Group 1:

<u>Need</u>	<u>Action</u>	<u>Role</u>	<u>NEED</u>	<u>Action</u>	<u>RAE</u>
Habitat mapping - Gw - spawning dist. - critical habitat	create maps 4 story map	Scott / FBR working group FN's / GeoLukon	Data Gaps	gather info + report	YRP / ADFG
Education	- App for public - Outreach - land acquisitions - Swim & Speak with Salmon - FEED - signage consolidate info	Scott / YFNSSA / YSSC / RRC	Harvest Data	gear management	
Literature Review		YFNSSA / JTC	Run timing	sonar / public report / netting ^{task}	DFO / FNS
TK consolidation	interviews	FNS	Wild Hatching Success Rate	- field studies	FN + RRC
Cultural connections	- Fish camps - Education - Story telling - Pot Lucks - purchase salmon for eating - Create fish traps - First Chum Ceremony - land guardians - bring local FN's to help with fieldwork	FNS	Genetic Data	collect samples + analyze data	YFNs, DFO, YFNSSA
Advocacy	International Agreements	YRP	Emergence Timing	wild hatching success	FN's
			Food availability (marine) (freshwater)		NOAA / ADFG UA? YU
			<u>Obstacles</u>		
			- TRUMP	- need fish to try options for restoration	
			- funding	- born out from Chinook / Climate Change	
			- capacity	- beavers	
			- logistics	- ID what to do with highest benefit	
			- remote location	- forest fires	
			- International	- lend slides / TMW	
			- data sharing	- high / low water levels	
			- data repository	- harvesting (Alaska)	
			- public perception	- geographical isolation	
				- old mining legislation	

Session 2 (Generating Actions), Group 2:

EDUCATION

- Schools
 - collaboration w/ teachers
 - YSSC
 - managers presenting
 - Salmon education in each class
- Universities → How to make these spaces more accessible to youth
- Opportunities to bring youth into the field
- Local Recreation/ Youth programs
 - salmon work happens in summer
- Connecting w/ Youth orgs (to swim and speak) (YSC, boys/girls, moving mtrs...)
- Connecting to Salmon in different ways
- Show that even w/o fishing there are still ways to have a relationship w/ Salmon
 - ↳ careers, net tying, art etc.

ADVOCACY

- finding other gear for fishing
- harvest management
 - providing explanation of 7 year agreement in a way people understand
- keeping the public in the loop about what we're doing (rebuilding, agreement)
- get youth to come up with a plan to manage salmon, bring it back to mgrs

TRADITIONAL LIFESTYLES

- Cultural Teachings
 - ↳ barriers to connecting to Culture
 - prioritization of keeping knowledge safe
 - ↳ stories, interviews, etc.
 - facilitating safe spaces to learn
 - on the land education
- Integration of Traditional practices w/ Western practices (fish traps for broodstock collection)
- indicators of salmon arrival

BACKGROUND INFO/DATA

- //
- work with Knowledge Holders to understand historic distribution of chum
 - ↳ work from this to update whether Chum are still there
- ground water locations, potential sites for projects not impacted by de-watering
- understanding issues (are they new)
- compendium (with maps) of life history, include TK, update periodically
- Data Hubs
- indicators of salmon arrival (document these across territory) wasps!

Session 3 (Generating Actions), Group 3:

