



# YUKON RIVER SALMON UPDATE



**Thursday, November 4, 2021**

Note: This update is intended to inform fish harvesters. Information provided in this update is preliminary and subject to change. For more information please refer to the contacts identified at the end of this update.

## **COVID19 MEASURES AND IMPLICATIONS**

As a result of measures deployed by the Government of Canada, Yukon Government, Yukon First Nation Governments, the United States Government, the State of Alaska, communities throughout Yukon and Alaska and the dynamic nature of such measures, some assessment projects may be impacted for the 2021 fishery year. Fisheries and Oceans Canada and the Alaska Department of Fish and Game (ADF&G) as well as other partners are working hard, while respecting the various mitigation measures, to deploy assessment projects to the extent the situation will allow. Some projects or the information provided by these projects may be impacted as a result of these measures.

## **SALMON FISHERY MANAGEMENT**

Fishery management decisions are based on projections of run size of salmon returning to the upper Yukon River in Canada. The development of fishery management actions considers the international spawning escapement target as the primary objective, the availability of harvest shares allocated to Canadian fisheries in accordance with the Pacific Salmon Treaty - Yukon River Salmon Agreement, and follows the Yukon River salmon fishery priority of allocation (1. First Nation, 2. Public Angling, 3. Domestic and Commercial). Specific allocations to fisheries are contingent on the overall abundance of salmon.

For the majority of the season Canadian fishery management decisions are primarily based on the information on salmon abundance from the Pilot Station Sonar assessment program located near the mouth of the Yukon River. Late-season fishery management measures may also be informed by information on salmon abundance from the Eagle Sonar assessment program located at the international border, although this information is mainly used to confirm Pilot Station program estimates.

It is important to note that some First Nation Governments have developed and implemented local management plans that define specific First Nation fishery management actions.



## **CHUM SALMON**

### **Canadian-Origin Fall Chum Salmon Escapement Goals and Revised Projection:**

The spawning escapement goal for Canadian-origin fall chum for the Yukon River mainstem is **70,000 – 104,000** fish. The escapement goal for Fishing Branch chum (Porcupine drainage) is **22,000 to 49,000** fish. These goals were set by the Yukon River Panel and are intended to ensure that enough salmon reach the spawning grounds each year to sustain the population.

The pre-season forecast for Yukon River mainstem fall chum salmon was for a run size of 136,000 to 191,000 fish. The pre-season forecast for Fishing Branch River chum was 22,000 to 30,000. The pre-season forecast for fall chum has been revised, with an in-season projection based on the close relationship between summer chum and fall chum run sizes within the same year.

This year’s summer chum run was the poorest on record. The revised projection for fall chum was for a run well below the pre-season forecasts which did not meet spawning escapement goals for either the Canadian Yukon mainstem or Fishing Branch rivers. All assessment projects have concluded. Project “Total Count to Date” are preliminary estimates and may be subject to further review. The final estimates will be published in the Yukon River Panel’s Joint Technical Committee Yukon River Salmon 2021 Season Summary and 2022 Outlook in spring 2022.

### **Comparison of Current and Historical In-season Chum Salmon Abundance Estimates for Various Projects:**

<b>Assessment Site</b>	<b>Date</b>	<b>Total Count to Date</b> (Number of fall chum estimated to have migrated past the assessment site)	<b>Total Count In 2020</b> (Unless otherwise stated) <sup>4</sup>	<b>Average Historical Cumulative Count</b> <sup>1</sup> (Average number of salmon estimated to have migrated past the assessment site)
Lower River (Pilot Station Sonar) ADF&G <sup>2,3</sup>	Project complete as of Sept 7	146,172	262,439	723,413
Upper River (Eagle, International Border Sonar) ADF&G & DFO	Project complete as of Oct 6	19,668	23,512	177,807
Porcupine River (Old Crow Sonar) VGG & DFO	Project complete as of Sept 29	3,323	27,447	36,513
Fishing Branch River VGG & DFO	Project complete as of Oct 22	2,395	4,795	19,614

<sup>1</sup> Previous 10 years averaged unless otherwise indicated

<sup>2</sup> 1995, 1997-2008, 2010-2020 (median)

<sup>3</sup> All chum salmon passage after July 19, 2021

<sup>4</sup> Porcupine River (Old Crow Sonar) total count to date in 2019



### Run Timing (Chum):

Chum salmon that enter the mouth of the Yukon River after July 19<sup>th</sup> are considered to be fall chum and may later be confirmed and adjusted with the use of genetics. Chum typically take 39 days to travel from the mouth of the river to the international border. Chum have been arriving at the international border since late August.

### Genetics, Age, Size (Chum):

Chum salmon were sampled for age, sex, length (ASL) and mixed stock analysis (MSA) at the Lower Yukon Test Fishery. As of Sept 10 sampled fish were 52% female, compared to a historical average of 58% female. This sample had an average length of 563 mm, which is below the long-term average (1982-2020) of 592 mm.

Fish sampled at the Lower Yukon Test Fishery through August 24 were 86% age-4 and 10% age-5, compared to historical averages (1983-2020) of 66% age-4 and 31% age-5. This year's low return of age-5 chum mirrors last year's poor return of age-4 fish.

Chum salmon were also sampled at Eagle Sonar between September 4 – 29. The sample was 40% female, higher than the long-term average of 36%. The average length of sampled fish was 567mm, lower than the long-term average of 597mm. Ages will be estimated post-season.

### Canadian-Origin Fall Chum Salmon Fishery Expectations and Management Actions:

Chum salmon spawning escapement goals will not be achieved in either the Yukon River or Fishing Branch Rivers, as such, neither the U.S. nor Canada anticipate having a harvest allocation as described in the Pacific Salmon Treaty (Yukon River Salmon Agreement). As the fall chum run progresses, DFO will monitor information from Pilot Station closely.

The following table, based on the Canadian Yukon River Chum Salmon Management Matrix, summarizes the revised projected expectations and fishery management actions for 2021 Canadian Yukon River Mainstem Chum fisheries:

	Expected Border Passage	Anticipated Fishery Status			
		First Nation	Public	Domestic	Commercial
Oct 21	Below minimum spawning escapement goals for Canadian Yukon mainstem (70,000) and Fishing Branch stocks (22,000)	Current run size information indicates that there is no available harvest allocation to Canada.	CLOSED	CLOSED	CLOSED

### Current Management Summary (Chum):

- First Nation Fishery: NO AVAILABLE HARVEST.
- Public Angling Fishery: CLOSED; CATCH, RETENTION AND POSSESSION LIMITS VARIED TO ZERO (0)
- Commercial and Domestic Fisheries: CLOSED



## **CHINOOK SALMON**

### **Canadian-Origin Chinook Salmon Escapement Goals and Pre-Season Forecast:**

The spawning escapement goal for Canadian-origin Chinook salmon is 42,500 to 55,000 fish. This goal was set by the international Yukon River Panel as an Interim Management Escapement Goal (IMEG) and is intended to ensure that enough salmon reach the spawning grounds each year to sustain the population and provide for current and future harvest opportunities.

In response to sustained period of poor returns and low survival, for the 2021 season the Yukon River Panel provided six recommendations to the Governments of Canada and the United States. These can be found in the Yukon River Panel's April 2021 press release at the following web address: <https://www.yukonriverpanel.com/publications/yrp-press-releases/>

The 2021 pre-season forecast was for **42,000 to 77,000** Canadian-origin Chinook salmon however uncertainty and past forecast performance strongly suggested that **it was unlikely that the run size would be at the upper end of this range**. In addition, it was thought possible that as was observed in 2019 and 2020 the return of Canadian-origin Chinook salmon would not be large enough to achieve the spawning escapement objectives, nor provide for harvest opportunities in either Alaska or Canada.

### **In-Season Assessment (Chinook):**

Information from the Pilot Station Sonar in the lower Yukon River in Alaska provides an early-season indication of run strength of Canadian-origin Chinook salmon. There is uncertainty associated with the Pilot Station estimate due to three principal challenges: 1) co-migration of Chinook salmon with several other fish species of similar size (species apportionment uncertainty), 2) distinction of Canadian-origin Chinook salmon from U.S-origin Chinook salmon (stock identification uncertainty based on genetic analysis), and 3) determining the point in the total run that is passing the sonar site (or the run timing). The size of the Yukon River is also extremely large at this site (both in terms of width and volume of water).

In the upper Yukon River, the estimate of the number of Chinook salmon returning to Canada is obtained from the Eagle Sonar Assessment Program located downstream of the international border near Eagle, Alaska. There is a higher degree of confidence in the estimated number of Chinook salmon migrating past the Eagle Sonar assessment program as Chinook salmon are more readily differentiated from other fish species and the overall size of the river is considerably smaller at this location.

In addition to the two enumeration programs (Pilot Station & Eagle) delivered by the Alaska Department of Fish & Game (ADFG), for the 2021 season seven enumeration programs operated within the Yukon. The following table presents the most current data available for each assessment project and compares these values to both the equivalent date in 2020 and the 10 year average of that date in the data's history.



**Comparison of Current and Historical In-season Chinook Salmon Abundance Estimates for Various Projects:**

<b>Assessment Site</b>	<b>Date</b>	<b>Total Count in 2021</b> (Number of Chinook salmon estimated to have migrated past the assessment site)	<b>Total Count In 2020</b>	<b>Average Historical Cumulative Count <sup>1</sup></b> (Average number of salmon estimated to have migrated past the assessment site)
Lower River (Pilot Station Sonar) ADFG <sup>2,3</sup>	Chinook counts completed as of September 7	124,874	162,252	182,140
Upper River (Eagle, International Border Sonar) ADFG & DFO	Chinook counts completed as of August 31	31,631	33,550	54,687
Porcupine River (Old Crow Sonar) VGG & DFO <sup>4</sup>	Chinook counts completed as of August 15	410	n/a	3,969
Klondike River Sonar TH <sup>5</sup>	Project completed as of August 13	843	470	825
Pelly River Sonar SFN <sup>6</sup>	Project completed as of August 25	4,802	5,678	7,450
Big Salmon Sonar Private Contractor	Project completed as of August 20	1,909	1,560	5,048
Tatchun Creek Video Weir LSCFN	n/a	Pilot year: Not providing in-season counts	n/a	521
Takhini River Sonar KDFN <sup>7</sup>	Project completed as of September 6	247	n/a	1,713
Whitehorse Fish Ladder YEC & YFGA	Project completed as of September 7	274	216	1,075

<sup>1</sup> Previous 10 years averaged unless otherwise indicated

<sup>2</sup> Pilot sonar counts (Includes both Canadian and U.S.-origin fish)

<sup>3</sup> Full time series average excluding 1998-1999, 2001, and 2009.

<sup>4</sup> 2014 – 2019

<sup>5</sup> 2010-2011, 2020

<sup>6</sup> 2016-2020

<sup>7</sup> 2017 & 2018



## **Run Timing (Chinook):**

The first Chinook caught in the Lower Yukon Test Fishery near Emmonak was on May 31. The Pilot Station sonar enumeration program (located around 200 km from the river mouth) has been operational since May 31. The Chinook run at Pilot Station is considered complete. Chinook typically take 29-30 days to migrate from Pilot Station to Eagle. The first Chinook was recorded at the Eagle Sonar on June 28; the run is considered complete as of August 31.

## **Genetics, Age, Size (Chinook):**

Chinook salmon were sampled for age, sex, length (ASL) and mixed stock analysis (MSA) at both the Pilot Station and Eagle sonar assessment sites (however the Eagle MSA will not be available in-season).

Genetic results of Chinook sampled at Pilot Station from May 31 through June 22 provided an estimate of 60% Canadian-origin (90% confidence interval of 54% to 67%). Sampling from June 23 through July 6 had an estimate of 56% Canadian-origin (90% confidence interval of 50% to 62%) This is an above average Canadian stocks for these time periods of the run. Results of genetic sampling completed after July 6 are not expected until post-season.

Sampling at Pilot Station during the same time frame indicated that the overall age classes were dominated by age-5 (47%) and age-6 (46%) Chinook, with few age-7 (4%) and age-4 (2%) fish. The sampled Chinook were 50% female.

Sampling at Eagle Sonar from July 5 to August 28 had an average of 44% female. This is near the project average of 42%. Mean length of fish sampled, 763 mm, is below the project average of 778 mm. Age composition of Chinook sampled at Eagle Sonar from July 5 – 26 was 2% age-4, 37% age-5, 58% age-6 and 3% age-7, which is a higher proportion of age-6 fish and lower proportion of age-4 and age-5 fish than the ten-year average (7% age-4, 41% age-5, 49% age-6 and 3% age-7).

## **Canadian Chinook Salmon Fishery Expectations and Management Actions:**

The spawning escapement goal for Canadian-origin Chinook is 42,500 – 55,000 fish. This goal was set by the Yukon River Panel as an Interim Management Escapement Goal (IMEG) and is intended to ensure that enough salmon reach the spawning grounds each year to sustain the population and provide for current and future harvest opportunities.

In response to sustained period of poor returns and low survival, the Yukon River Panel recommended that the Canadian-origin Chinook salmon run should be managed to ensure spawning escapement falls within the 2021 IMEG range (42,500 – 55,000) and provide for agreed harvest shares in both countries as outlined within the Yukon River Salmon Agreement for the 2021 Season.

## **In-Season Chinook Salmon Information (Pilot Station and Eagle Sonar):**

The pre-season forecast indicated that the 2021 return of Canadian-origin Chinook may not be of sufficient size to achieve spawning escapement goals nor provide for harvest opportunities. As Chinook pass Pilot Station Sonar, passage estimates can be used to develop in-season projections for total Canadian-origin run size. Information collected at Pilot Station suggested a run below or near the pre-season forecast. This year's passage at Eagle Sonar is considered complete as of August 31; the data show a run size well below the lower end of the pre-season forecast range, which will not meet spawning escapement goals.



## Chinook Salmon Harvest Management Zone and Fishery Status:

Date	Expected Border Passage	Fishery Status			
		First Nation	Public	Domestic	Commercial
Sept 9	Below minimum spawning escapement goal ( $\leq 42,500$ )	Current run size information indicates that there is no available harvest allocation to Canada.	CLOSED	CLOSED	CLOSED

### Current Management Summary (Chinook):

- First Nation Fishery: NO AVAILABLE HARVEST.
- Public Angling Fishery: CLOSED.
- Commercial and Domestic Fisheries: CLOSED

### Information Links and Notifications about Fishery Management Actions

**Yukon River Panel (Pacific Salmon Treaty)** – the Yukon River Salmon Agreement and Yukon River Panel Recommendations for 2021 can be found at: <https://www.yukonriverpanel.com/>

**Canadian First Nation Subsistence Fisheries** – Fisheries and Oceans Canada communicates directly with Yukon River First Nation Governments by way of pre-season, in-season and post-season meetings and issuance of an *Aboriginal Communal Salmon Fishing Licence* to First Nations.

**Canadian Recreational, Domestic, and Commercial Fisheries** – Information is available via the Fishery Notification System at: <http://notices.dfo-mpo.gc.ca/fns-sap/index-eng.cfm>  
Fishers are encouraged to subscribe to receive automatic notifications on fisheries of interest via email at: [http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?pg=pub\\_reg](http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?pg=pub_reg)

**U.S. Fisheries** – Information on fisheries in U.S. portion of the Yukon River is available at: <http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareayukon.salmon>

**Joint Technical Committee** (of the Yukon River Panel) - Further information on Canadian-Origin salmon escapement goals and preseason forecasts may be found in the Yukon River Salmon 2020 Season Summary and 2021 Season Outlook Report at: <https://www.yukonriverpanel.com/publications/yukon-river-joint-technical-committee-reports/>

### Contacts

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