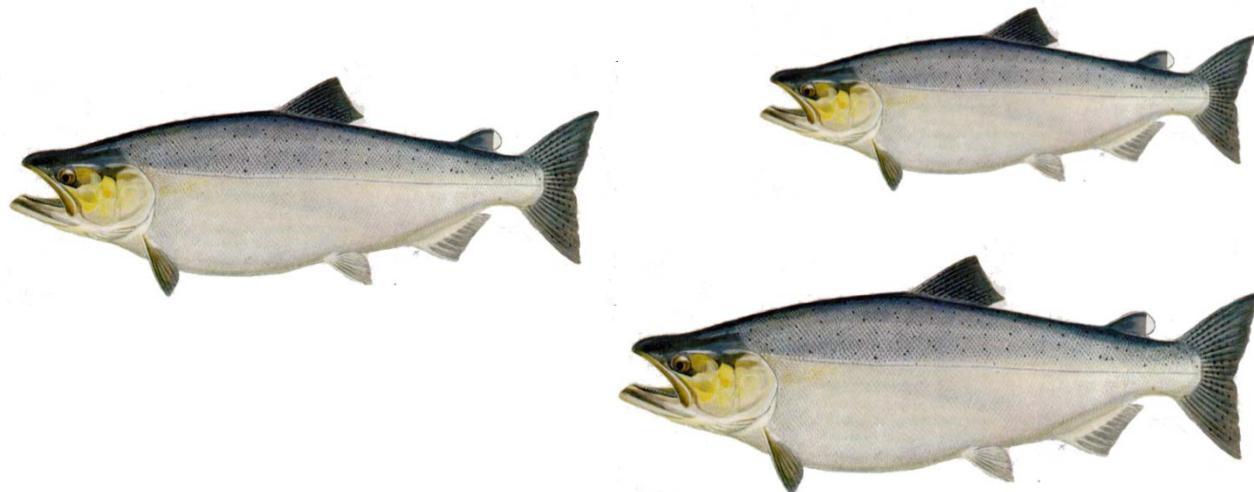


2016 Fraser River Chinook Key Information for Management



FN Forum March 8-10
Nanaimo, BC

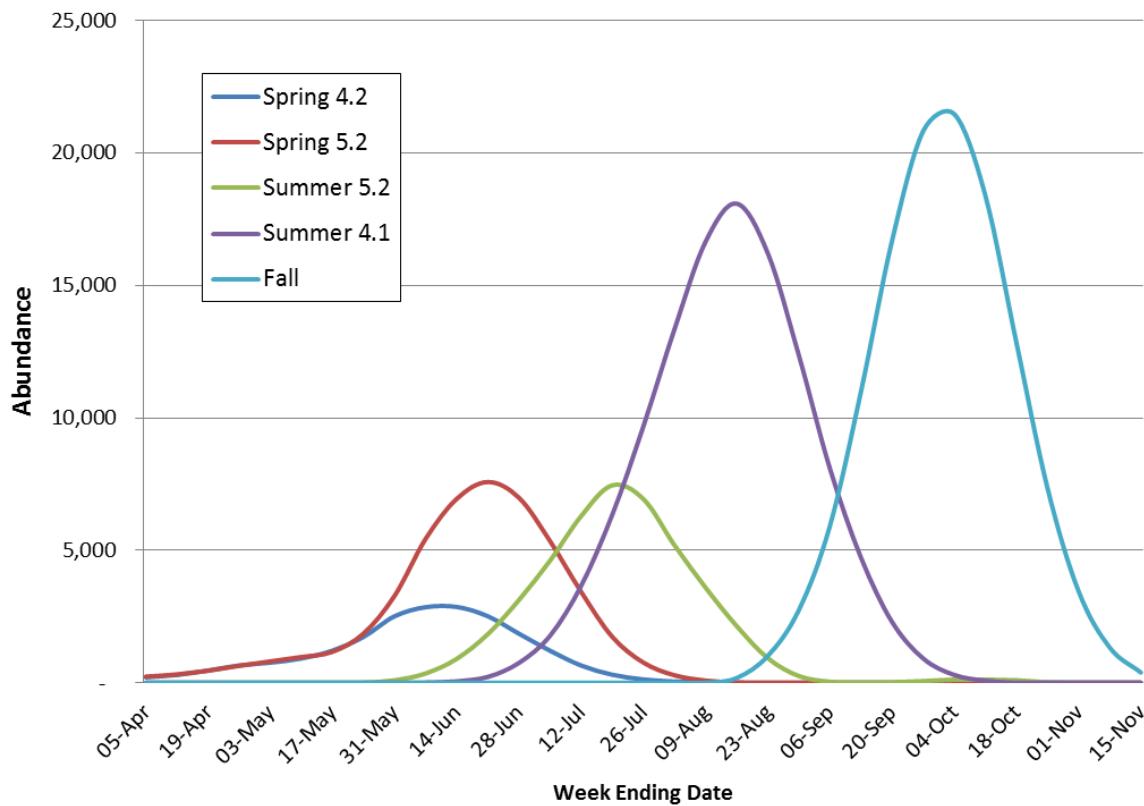


Outline

Provide background information, management objectives and fisheries management approach for:

- Fraser Spring 4₂ Chinook
- Fraser Spring 5₂ Chinook
- Fraser Summer 5₂ Chinook
- Fraser Summer 4₁ Chinook
- Fraser Fall Chinook
- Other southern Chinook

Fraser Chinook-run timing into Fraser



Data based on returns to Fraser River calculated in run reconstruction model in 2014.



Fraser River Spring 4₂ Chinook

PST Unit	CU #	CU Name	Spawning Locations
Spring 4 ₂ Chinook	16	STh Bessette Creek	Bessette Creek;
	17	LTHOM spring	Bonaparte River; Coldwater River; Deadman River; Louis Creek; Nicola River; Spius Creek

- Spring 4₂ chinook return to spawn from early March through late July.
- Migration peaks in June in the lower Fraser River.
- Primarily mature as adults at age 4 (90%) with lower numbers maturing at age 5 (7%) and occasionally at age 3 (3%).
- CWT indicator stock is the Nicola River.



Fraser River Spring 4₂ Chinook

The Outlook is *low*. Expectations for 2016 are for continued modest improvements over the 2012 parental brood escapements, however overall abundance is expected to remain fairly low due to ongoing unfavorable and highly variable marine survival conditions.

Brood Year	Run Reconstruction Escapement
2011	5,238
2012	11,557
2013	6,455
2014	16,439
2015	n/a

← BY

These are
reconstructions of
escapement for all
Spring 4₂ populations



Fraser River Spring 4₂ Chinook

The objective wording has been updated to clarify intent of management. However, the general management approach implemented in recent years to restrict fisheries impacts on these populations is intended to continue and fisheries management actions are now outlined in *Section 13 Southern Chinook Salmon Fishing Plan - Southern ISBM Chinook*.

The objective for Fraser Spring 4₂ chinook is to conserve these populations by continuing to minimize incidental harvests in Canadian ocean fisheries and to continue fisheries management measures in the Fraser River to limit overall impacts and support rebuilding.



Fraser River Spring 4₂ Chinook

- Marine waters: For 2016, management actions to protect these fish remain in place:
 - change to start of recreational restrictions in the area off the mouth of the Fraser River.
 - The recreational fishery at the mouth of the Fraser will be chinook non-retention from March 1 to August.
- Fraser River: limited directed fisheries permitted for First Nations FSC fishery. In recent years these fisheries have been managed using an effort based tool to limit impact on these stocks. Actual fishing plans will be set based on discussions with First Nations; opportunities are typically short duration fisheries that are spread out across the run timing (April - early August).
- Actions for Spring 4₂ chinook are integrated with Spring and Summer 5₂ actions.
- See [Section 13 Southern Chinook Salmon Fishing Plan - Southern ISBM Chinook](#).

Fraser River Spring and Summer 5₂ Chinook

- Spring 5₂ chinook return to the Fraser River to spawn from early March through late July and migration peaks in late June in the lower Fraser.
- Summer 5₂ chinook have later timing and return to the Fraser River to spawn from late June to August with a peak in late July.
- These populations primarily mature as adults at age 5 (approx. 70%) and age 4 (approx. 20%) with lower numbers at age 3 and age 6.
- No current CWT indicator stock (previously Dome Cr.). Work underway to explore feasibility of developing CWT indicator for Chilko (Summer 5₂)

Fraser River Spring and Summer 5₂ Chinook

The Outlook is *low*. Expectations for 2016 are for continued modest improvements over the 2012 parental brood escapements, however overall abundance is expected to remain fairly low due to ongoing unfavorable and highly variable marine survival conditions.

Brood Year	Run Reconstruction Escapement
2010	41,707
2011	32,487 ← BY
2012	24,302
2013	36,169
2014	77,761
2015	n/a



Recent 'productivity'

Fraser Spring and Summer 5₂ Chinook

Year	Brood Year Escapement (5 years prior)	Post-Season			R/S Index ^c
		In-season Terminal Run	Reconstructed Terminal Run	CTC Escapement	
2008	104,299	~61,000	51,483	32,581	0.61
2009	74,257	~63,000	72,143	47,123	1.20
2010	49,710	~62,000	50,234	36,513	1.25
2011	52,867	50,390	45,698	30,674	1.07
2012	27,661	42,730	34,326	21,797	1.53
2013	39,269	38,550	40,698	30,155	1.28
2014	53,234	47,550	93,147	56,841	2.16

While R/S has improved somewhat; 2016 returns coming from low brood year (2011)

^a Final in-season Albion run size estimate used for management purposes.

^b Total escapement estimate which includes infilling for missing escapement data. Brood year escapement for the 2016 return is bolded.

^c Recruits per spawner index. Assumes returns and escapements are all 5 year olds. Pre fishery recruitment is estimated by assuming a marine harvest rate of 19%.



Fraser River Spring and Summer 5₂ Chinook

- Spring and Summer 5₂ Chinook are assessed in-season with an abundance model based on catch from the Albion Test Fishery.
- Similar to recent years the Albion test fishery will start the last week of April.
- Data from stat week 5(1) to stat week 6(2) will be input into the model.
- Preliminary in-season updates generally released in mid-May and early June, with final update by the third Monday in June.
- Due to low brood escapement and unfavourable marine survival conditions, the season will commence with management measures consistent with Zone 1 management.
- DFO plans to continue to start each year in Zone 1 until brood year escapements and/or the recruitment rates substantially improve.



Fraser River Spring $4\frac{1}{2}$ + Spring and Summer $5\frac{1}{2}$ Chinook Management

- Marine waters: Management actions in marine waters to protect these fish remain in place;
- For 2016, the Department has received proposals from the SFAB and First Nations seeking a review of management actions , particularly for Juan de Fuca area. Further discussions are required.
- Fraser River: Recreational- extension of non-retention period proposed to early August.

Fraser Mouth

	before mid-July	mid-July to early August	early August to December 31
Zone 1	no retention of chinook salmon	no retention of chinook salmon	2 chin per day > 62 cm
Zone 2	no retention of chinook salmon	no retention of chinook salmon	2 chin per day > 62 cm
Zone 3	no retention of chinook salmon	2 chin per day > 62 cm	2 chin per day > 62 cm

Fraser River Region 2

	before mid-July	mid-July to early August	early August to August 31	September 1 to December 31
Zone 1	no fishing for salmon	no fishing for salmon	4 chin per day, 1 > 50 cm	4 chin per day, 1 > 62 cm
Zone 2	no fishing for salmon	no fishing for salmon	4 chin per day, 1 > 50 cm	4 chin per day, 1 > 62 cm
Zone 3	no fishing for salmon	4 chin per day, 1 > 50 cm	4 chin per day, 1 > 50 cm	4 chin per day, 1 > 62 cm

- See [Section 13 Southern Chinook Salmon Fishing Plan - Southern ISBM Chinook](#).



Fraser River Spring 4_{2+} Spring and Summer 5_2 Chinook Management

Fraser River - First Nations

- **January 1 to July 15:** First Nations fisheries taking place during the Spring 4_2 migration period will be managed taking into account conservation requirements for this stock.
- After July 15th, considerations for Fraser Spring and Summer 5_2 chinook as follows:
 - **Zone 1:** Expected exploitation rates on Spring and Summer 5_2 chinook reduced by at least 45% compared with the 2000 to 2006 base period.
 - **Zone 2:** Expected exploitation rates similar to those of the base period.
 - **Zone 3:** Harvests of Spring and Summer 5_2 chinook may occur during chinook-directed fisheries or as by-catch in sockeye-directed fisheries.

Fishery impacts will need to take into account harvests in chinook directed fisheries and/or as by-catch in sockeye directed fisheries. DFO will consult with First Nations on specific fishing plans for FSC fisheries.

- See [*Section 13 Southern Chinook Salmon Fishing Plan - Southern ISBM Chinook*](#).



Fraser River Summer 4₁ Chinook

PST Unit	CU #	CU Name	Spawning Locations
Summer 4 ₁ Chinook	7	Maria Slough	Maria Slough
	13	STh summer age	Adams River; Little River; South Thompson River; Lower Thompson River;
	15	Shuswap River summer age	Shuswap River-lower; Shuswap River-middle

- Consists of several populations which spawn almost exclusively within the Thompson River watershed.
- Migrate through the Lower Fraser River from mid-July to mid-September.
- Indicator stock is the Shuswap River – lower
- Stocks return primarily as 60-70% four year olds with the remainder being 2, 3 and 5 year olds.

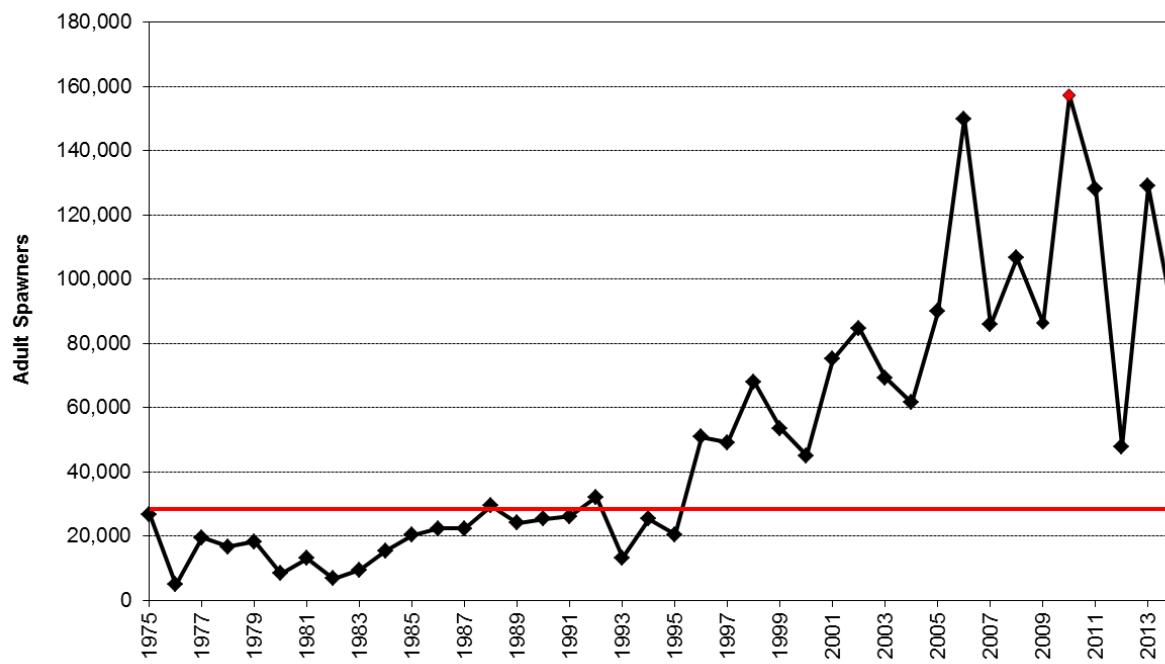
Fraser River Summer 4₁ Chinook

The Outlook is *low*. Instability in smolt to adult survival rates, combined with poor escapements in 2012, temper the outlook for this aggregate. The 2012 brood year escapement was the second lowest aggregate escapement since 1996.

Brood Year	Run Reconstruction Escapement
2011	141,131
2012	53,378
2013	125,364
2014	88,028
2015	*

*2015 estimate of PST spawner abundance was 176K; reconstructed abundance not available at this time.

Fraser 4₁ Spawner Abundance



Note: these values are lower than run reconstruction estimates as values are not expanded for unmonitored populations.

Despite low spawner abundance in 2012; overall abundance has increased substantially since 1995. 2012 spawner abundance was well below the habitat based estimate of MSY for Lower Shuswap.



Fraser River Summer 4₁ Chinook

- A biologically based escapement objective for the Summer 4₁ has not been established.
- Directed fishing opportunities may occur on this stock group, provided that fisheries can be designed to limit impacts on co-migrating possible stocks of concern including: Spring 4₂ chinook, Spring/Summer 5₂ chinook, Fraser Fall chinook (if required), Fraser River sockeye (if required), and Interior Fraser River coho.
- In 2016, while returns to this unit have been healthy and exhibiting an increasing trend in recent years, the 2016 return is coming from a poor brood year escapement. Care will be taken to ensure overall fisheries impacts are not increased in 2016.

Fraser River Fall Chinook

PST Unit	CU #	CU Name	Spawning Locations
Fraser Fall 4 ₁ Chinook	3	LFR fall white	Harrison River

- Migrate through the Lower Fraser River from Sept to October with the peak during last two weeks of September
- CWT indicators for Harrison and Chilliwack River Hatchery
- Stocks return primarily as four year olds with three year olds and very small numbers of two and five year olds.
- Chilliwack enhanced origin chinook contribute substantial abundance to this group



Fraser River Fall Chinook

The Outlook is *low*. Current marine conditions appear unfavorable, thus expectations for escapements in 2016 are highly uncertain, and tempered by the low parent brood escapement in 2012. A formal forecast for 2016 will be available in early spring.

Brood Year	Harrison Escapement	
2011	123,893	
2012	44,694	← BY
2013	43,163	
2014	44,925	
2015	101,500	

Note: these are the Harrison River spawner abundances, not reconstructions for all Fall chinook



Fraser River Fall Chinook

- The PST approved escapement goal (to generate MSY) for the Fall 4₁ (Harrison) chinook is a range of 75,100 to 98,500 spawners.
- The forecast estimate of the spawner abundance (i.e. returns to the spawning grounds after all ocean and freshwater fisheries removals) for Harrison chinook will be available later in March.
- Overall exploitation rates on this chinook management unit are low, averaging approximately 25%.
- Additional fishery management actions, including chinook non-retention in commercial fisheries in the Fraser River and recreational fisheries on the Harrison River, will be considered if the forecast is below the escapement goal range.



Other Southern Chinook

Lower Georgia Strait Chinook

Salmon Outlook for Georgia Strait Fall (incl. Cowichan) chinook: *low to near target.* Continued rebuilding with 2015 return similar to previous year; still below maximum sustained yield (MSY) target.

Management measures remain in place to protect Lower Georgia Strait chinook, including the Nanaimo, Chemainus and Cowichan River chinook stocks. These include seasonal time and area closures in specific locations in Strait of Georgia and approach waters of these systems.

Additional actions implemented last summer to respond to environmental conditions.



Update on SBC Chinook Integrated Strategic Planning

What will be in the strategic plan?

- A high level synopsis of work to date that summarizes: Background; Status + trends; Limiting factors; Threats and knowledge gaps; Objectives; and, Strategies
- The plan will NOT be a prescription for specific actions that will be required; these will follow from the strategies.
- Some case studies and examples of approaches that have been taken and actions underway are identified.
- The strategic plan will be a *draft*; it is expected that the plan will inform further consultation and additional feedback on the plan will be incorporated.
- A separate presentation is available that provides a progress update on the work



Discussion

With respect to 2016 fisheries planning, we are seeking your feedback the management approach outlined.

- *What are the key considerations that need to be taken into account?*
- *Are there any modifications you would suggest?*
- *What considerations should be given to managing chinook fisheries during the Early Stuart window closure?*
- *Are there additional adjustments that should be considered in the event of adverse environmental conditions (e.g. low flows/ warm water temperatures)?*

Is it time for a review of our management approach in recent years (e.g. over the last 5 years) to understand the effectiveness of management actions that have been implemented?

- *What should be considered in the work plan? What are the key questions that need to be addressed?*