Interior Fraser River Coho Management

2015 Post-season update and 2016 Fisheries Planning
FN FORUM Meeting
March 9, 2016
Draft 5

Interior Fraser River Coho Background

- In response to significant stock declines through the 1990's, fishery restrictions (<3% exploitation rate) implemented starting in 1998. 3
- COSEWIC designation as *endangered* in 2002.
- Interior Fraser Coho Recovery Team was established and a comprehensive conservation strategy developed in 2006
- While spawning escapements have improved somewhat in recent years, overall abundance remain well below levels observed since the significant declines in the 1990's.
- Spawner abundance was 18,500 in 2014, a large decline from spawner abundances in 2012 and 2013 that exceeded 50,000.

Interior Fraser River Coho Recovery Objectives

- Short Term Objective: 3 year geometric mean escapement in at least half of the subpopulations within each of the 5 CUs to exceed 1000 natural spawners, excluding hatchery fish spawning in the wild; approximately 20,000 wild spawners; and
- Longer Term Objective: 3 year geometric mean escapement in all of the subpopulations within each of the 5 CUs to exceed 1000 natural spawners, excluding hatchery fish spawning in the wild; approximately 40,000 wild spawners

(*adapted from 2006 IFC Recovery Team Objectives 1 and 2, Decker et al., 2014)*

2015 Fishery Post-season Review Update

2015 Fisheries Management Plan

- Overall objective for 2015 for Interior Fraser River coho (including Thompson River coho) was to manage Canadian fisheries to an exploitation rate (ER) of 10% or less.
- Objective was consistent with a PST "Low" status.
- Actual fisheries were planned to allow a buffer between the projected ER and the PST ER limit of 10% for Canadian fisheries and to address uncertain impact of poor ocean conditions on survival.

Table 1. Pacific Salmon Treaty status-based exploitation rate limits for Canadian Management Units

Management Unit Status	US ER caps	Total Exploitation Rate
Low	10%	Up to 20%
Moderate	12%	>20 to 40%
Abundant	15%	>41 to 65%

2015 Coho Management Approach

- Specific fisheries management measures for 2015 were developed based on input from First Nations and stakeholders, and informed by the following considerations:
  - WSP status assessment, science advice on conservation objectives, stock productivity, fisheries impacts and uncertainties (e.g. impact of high water temperatures in 2014 marine entry year for coho smolts);
  - 2015 outlook and pre-season forecast information;
  - Pacific Salmon Treaty requirements (principally Annex IV – Chapter 5);
  - Potential configuration of fisheries targeting more abundant co-migrating stocks or species.
  - Manageability of management measures

2015 Coho Management Plan

- General characteristics:
  - Re-instatement of full 30-day window closure in Fraser River.
  - FSC: retention of wild and hatchery coho bycatch in fisheries targeting other species; tributary harvests where abundances identified.
  - Economic Opportunity / In-river Demo Fisheries: Non-retention of wild coho; additional fishing effort / time relative to pre-2014 fishery
  - Commercial – non-retention of wild coho; additional fishing effort / time relative to pre-2014 fishery
  - Recreational – some increased impacts (relative to pre-2014 fishery) in areas and times when IFR Coho are present in low levels (e.g. some flexibilities offered in Northern Johnstone Strait, portions of Georgia Strait in September, boundary changes for wild coho retention on WCVI).

2015 Fisheries Results

- Significant in-season reduction in fisheries targeting Fraser sockeye and pink relative to pre-season expectations.
- Preliminary post-season estimate of Canadian impacts is 2.89% (2.05 % marine, 0.84 % freshwater)
- Pre-season projection was for ER of approx. 8%
- U.S. impacts are not available until 2017, but for our post-season calculations, 10% is assumed.
- Total 2015 ER estimate (preliminary) = 12.89%

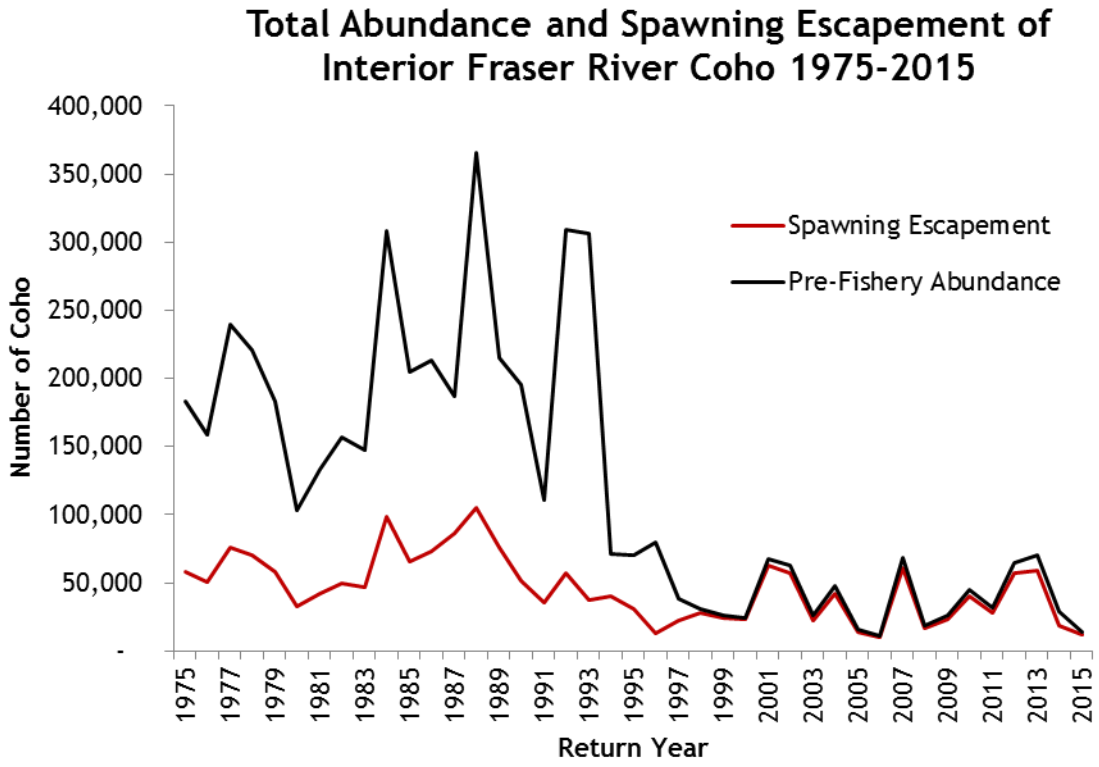
2015 escapements and total return

- 2015 IFR coho spawner abundance: 12,436
- Total pre-fishery abundance: approx. 14,276
- Returns were well below the lower end of the 2015 forecast range.

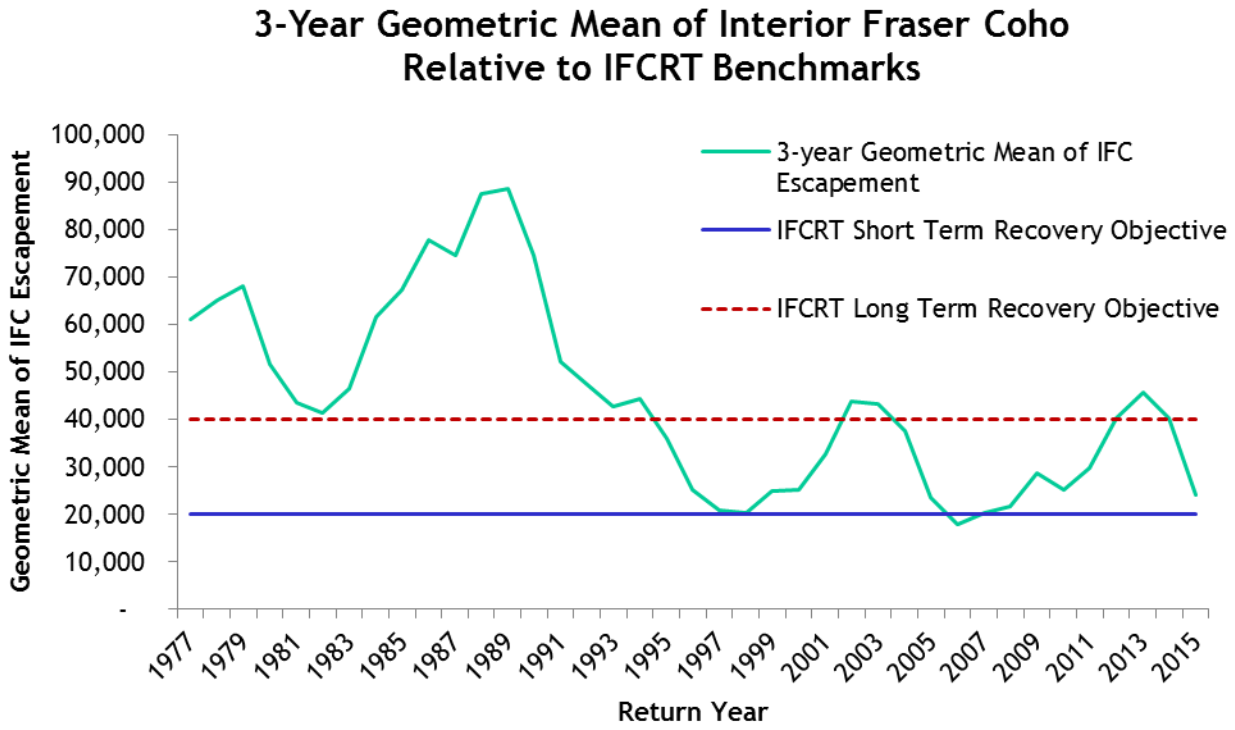
Probability Level	Abundance Forecast (2015)
0.90	109,625
0.75	72,296
0.50	46,036
0.25	29,314
0.10	19,332

- Small size, low fecundity and low female-to-male ratios also observed on spawning grounds.
- Other systems in Southern B.C., WA & OR displayed lower-than-forecast returns in 2015.

Total Abundance and Escapement



Performance relative to recovery objectives (as of 2015)



- IFR coho was above the short term recovery objective of 20,000 in 2015.
- Downward trend due to declines in spawner abundance in 2014 and 2015.

2016 Fishery Planning

2016 Fisheries Planning

- **Similar to 2015, considerations for establishing IFR coho management objectives and fishery measures for 2016 include:**
  - WSP status assessment
  - Stock productivity information
  - Environmental conditions
  - Uncertainties in fisheries impacts modelling
  - 2016 outlook and pre-season forecast information
  - Pacific Salmon Treaty commitments
  - Potential configuration of fisheries targeting more abundant co-migrating stocks or species
  - First Nations / Stakeholder feedback

2016 Fisheries Objectives

- **Canada has assessed the PST status of IFR coho as** "low", meaning that both Canada and the U.S. are each constrained by an ER objective of 10% or less.
- To further advance recovery and conservation, the objective is to manage Canadian fisheries in a highly precautionary manner with fisheries management measures similar to those in place prior to 2014.
- Canada will implement fisheries restrictions in Canadian fisheries, with an anticipated domestic ER in the range of 3 – 5 %.
- Minor modifications from pre-2014 plan will be considered to advance improvements in manageability.

2016 Projections of Potential Spawners relative to Recovery Plan objectives

	Forecast Abundance			Proj./Act. Spawner Abundance			3yr Geomean Spawners		
	low (10%)	mid-point	high (90%)	low	mid-point	high	low	mid-point	high
2016	5,352	14,227	38,080	4,549	12,093	32,368	10,098	13,988	19,422
2015					12,436			23,639	
2014					18,200			38,652	
2013					58,361			42,846	
2012					54,365			36,325	
2011					24,791			26,236	
2010					35,563				
2009					20,483				

- Based on a projected exploitation rate of 15% (5% CAN + 10% US)
- Cumulative projected impact of Canadian fisheries is for illustrative purpose only. Further planning work required to confirm projections.
- Over the forecast range above, the 3 year geometric mean spawners will not achieve the short-term recovery objective of 20,000.

2016 Coho Management Approach

- General fisheries characteristics proposed (similar to pre-2014 approach):
  - Full window closure in Fraser River (early September to early October) for non-selective gear
  - FSC: all efforts to release wild coho bycatch unharmed in fisheries targeting other species in times when IFR coho are present; very limited tributary harvests may be considered subject to assessment of local abundances
  - Economic Opportunity / In-river Demo Fisheries: Non-retention of wild coho; fishing effort / time restrictions in times when IFR coho are present
  - Commercial – non-retention of wild coho; fishing effort / time restrictions in times when IFR coho are present
  - Recreational – non-retention of wild coho in areas and times when IFR Coho are present

2016 Projections of IFR coho impacts

- Impacts of Southern B.C fisheries are expected to be similar to 3% ER assessed domestically from the pre-2014 period for non-terminal fisheries.
- Continued evolution of accounting practices, as well as inclusion of a broader range of fisheries and mortality factors by the Canada – U.S. bilateral Coho Technical Committee will mean that post-season assessment of Canadian impacts may exceed the 3 % level using the Fisheries Regulation Assessment (FRAM) model.
- More detailed projections of impacts will be provided as fishing plans become finalized.
- Domestic models for assessing fisheries impacts are being reviewed through the CSAS process.

Discussion Questions:

With respect to 2016 fisheries planning, we are seeking your feedback as follows:

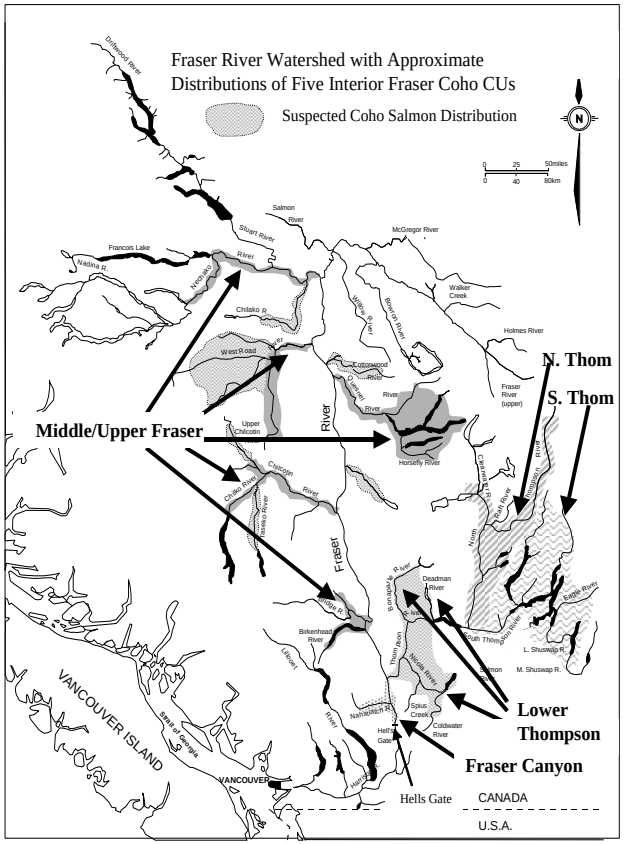
- *With respect to the general direction of adopting similar management measures similar to those in place prior to 2014 , what are the key considerations that need to be taken into account? Are there any modifications you would suggest?*

The views received during consultations will inform final decisions on the 2016 fishing season to be included in the Southern BC IFMP.

Background Slides

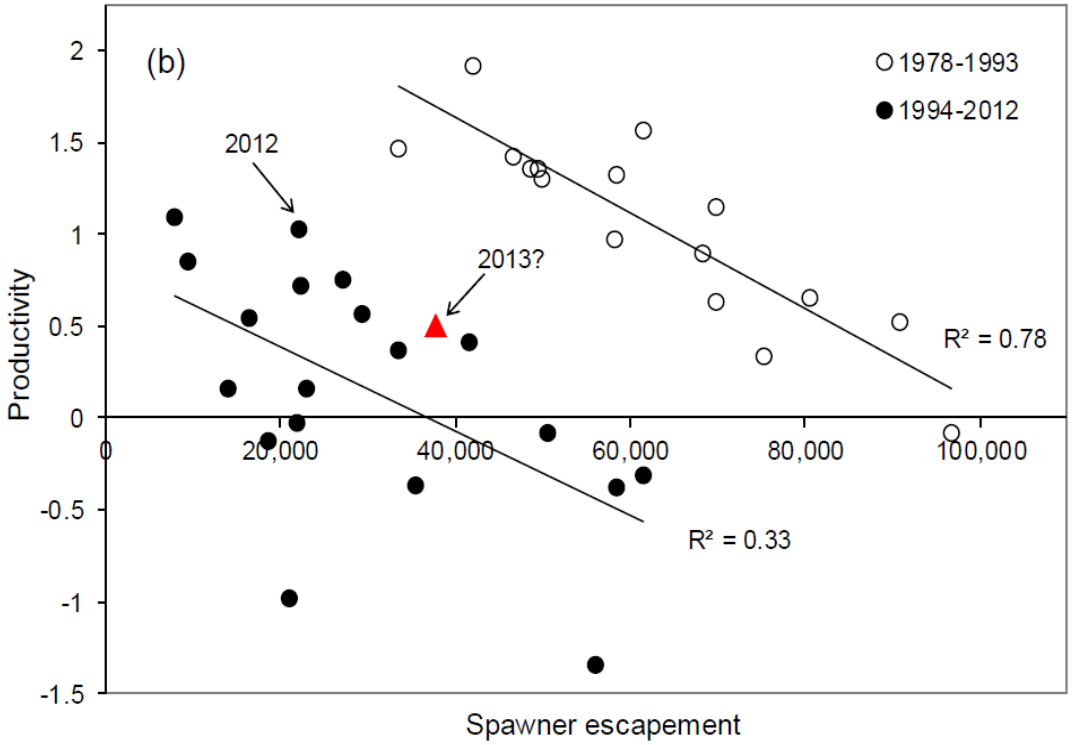
Interior Fraser Coho Conservation Unit Description

Conservation Unit (CU)	Subpopulation
South Thompson	Adams River
	Middle/Lower Shuswap
	Shuswap Lake
	Total
North Thompson	Lower North Thompson
	Middle North Thompson
	Upper North Thompson
	Total
Lower Thompson	Lower Thompson
	Nicola
	Total
Middle/Upper Fraser	Middle Fraser
	Upper Fraser
	Total
Fraser Canyon	Fraser Canyon



Trends in productivity

Decker et al, 2014



WSP Biological Status Assessment (IFR Coho CUs): *Parken et al. 2015*

Low productivity regime

- No evidence that these CUs have moved above the current low productivity regime (persistent since 1991)
- Similar to finding of Decker et al. 2014

WSP status assessment:

WSP status	Conservation Unit
Amber / Green	• Lower Thompson • North Thompson
Amber	• Middle Fraser • Fraser Canyon • South Thompson

- CU status was Amber or Amber/Green under conditions of low ER (<13%) using data from 2000 to 2013 years.
- Low escapements in 2014, 2015 and potentially 2016 may affect CU status assessment.