2014 Post Season Review

presented to: Fraser River Forum on Conservation and Harvest Planning
16-Dec-2014

Background

Fraser Sockeye History

- Currently there are 24 WSP Conservation Units identified for Fraser Sockeye
- Generally Fraser Sockeye that rear in lakes return predominantly as 4 year olds spending two years in freshwater and two years in the marine environment (4_2). Some stocks can exhibit strong 5 year old components (5_2) (i.e. Pitt River).
- Some Fraser sockeye stocks that rear temporarily in the estuary of the Fraser River return predominantly as three year olds (3_1) or four year olds (4_1) where less time is spent in freshwater (Harrison).

Background

Fraser Sockeye Harvest Management

- The four Fraser sockeye aggregates managed under the PST Annex generally contain stocks with similar return timing in the marine area.
- Canada's escapement plan specifies escapement requirements that vary with run size for the all run timing aggregates and includes total mortality caps (60%-65%)
- At low sockeye aggregate abundances, low abundance exploitation rates (LAERs) are implemented to protect 80-90% of the run timing aggregate while allowing for fisheries on more abundant co-migrating run timing groups and/or species
- In-season assessments of run size, timing and environmental conditions and concerns for other sockeye stocks and species directly influence harvest opportunities

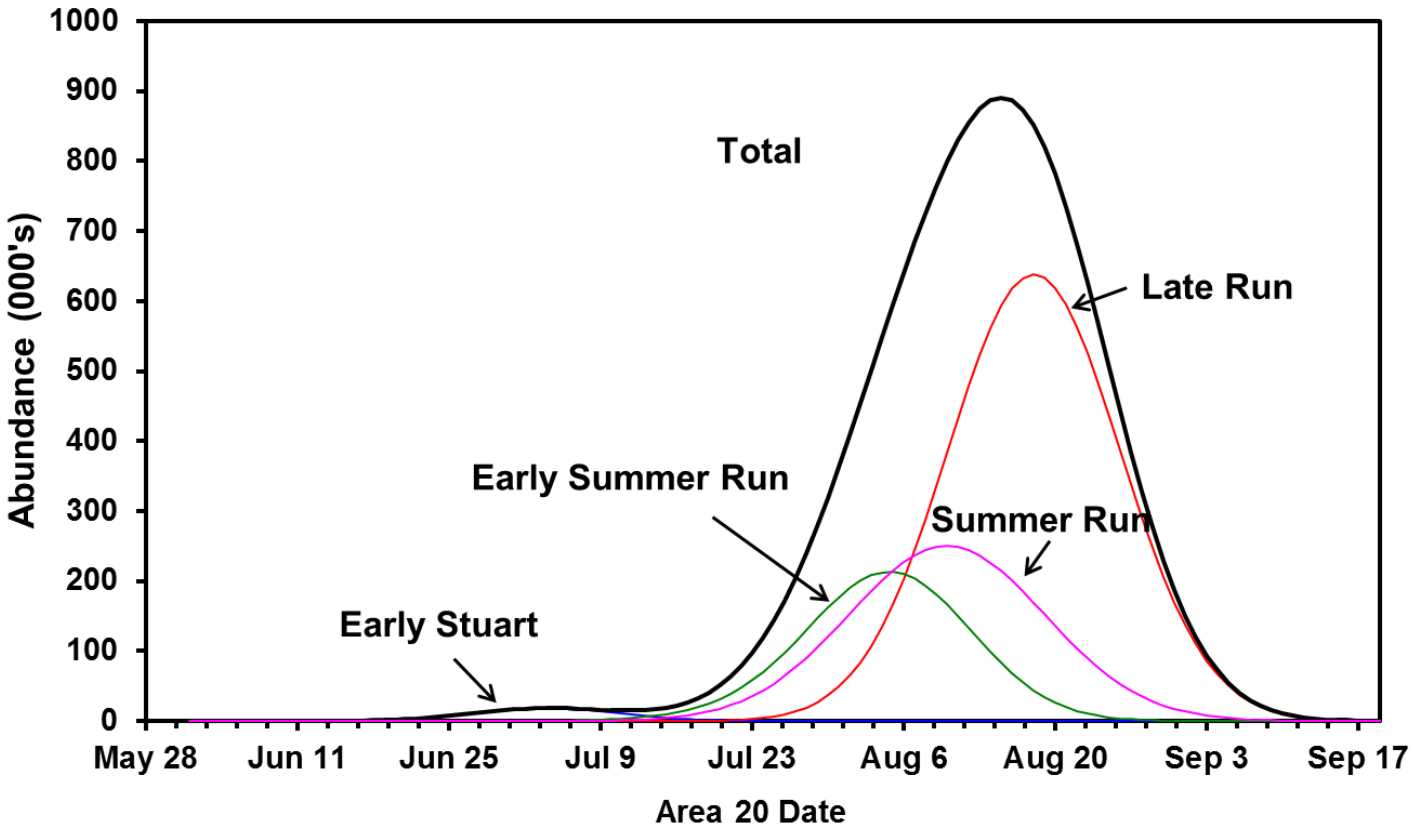
2014 Sockeye Pre-season

2014 Sockeye Forecast

- Forecasts are a range of values
- Forecasts for Scotch, Seymour, Harrison, Late Shuswap and Portage Creek (66% of the total p50 forecast) were particularly uncertain given forecast models were using record brood year effective female spawners

	Probability that the Return will be at or below specified Run Size				
Management Group	**p10**	**p25**	**p50**	**p75**	**p90**
Early Stuart	132,000	189,000	299,000	476,000	709,000
Early Summer	730,000	1,741,000	4,126,000	8,470,000	16,805,000
Summer	2,127,000	3,393,000	5,699,000	10,116,000	17,781,000
Late	4,248,000	7,465,000	12,730,000	22,059,000	36,719,000
Total	7,237,000	12,788,000	22,854,000	41,121,000	72,014,000

Pre-Season Run Size & Timing Expectations



- Directed harvest opportunities were expected throughout forecast ranges (p10-p90) for all stock groups except for Early Stuart sockeye
- Harvest constraints were expected (Cultus sockeye, Interior Fraser Coho and Fraser River Steelhead)

Opportunities at mid-point forecast

- Significant harvest opportunities were expected pre-season for First Nation, recreational and commercial fisheries
- In-season Run Size estimates and MAs could have significant impacts on expected harvest opportunities

	Pre-season p50 Forecast	Escapement Target	Test Fisheries	Management Adjustment	Harvest Opportunities[a]
Early Stuart	299,000	119,600	6,700	102,900	69,800
Early Summer	4,126,000	1,444,100	64,900	606,600	2,010,400
Summer	5,699,000	1,994,700	54,500	210,900	3,438,900
Late	12,730,000	4,455,500	42,300	1,243,700	6,988,500
Total	22,854,000	8,013,900	168,400	2,164,100	12,507,600

[a] Harvest Opportunites include US and CDN TAC and the Canadian Aboriginal Fisheries Exemption amount of 400,000.

2014 Sockeye In-season

2014 In-season Run Size

- Overall the final In-season Run Size for Fraser sockeye was slightly below p50 expectations
- Although the Early Summer return was likely the second highest on record, the in-season run size was less than half of the p50 forecast. This can be attributed to the low returns, relative to expectations, to the South Thompson.
- The Summer return was nearly 1.5 times p50 expectations. Harrison in particular returned much higher than expected.

Management Group	Pre-season Forecast p25	p50	p75	Final In-season Run Size [a]
Early Stuart	189,000	299,000	476,000	233,500
Early Summer	1,741,000	4,126,000	8,470,000	1,900,000
Summer	3,393,000	5,699,000	10,116,000	8,150,000
Late	7,465,000	12,730,000	22,059,000	9,600,000
Total	12,788,000	22,854,000	41,121,000	19,883,500

[a] Final in-season Run Size as of October 7th 2014

Environmental Conditions and MA

- Discharge was average for the early portion of the Early Stuart migration and below average for the remainder of the season
- Fraser River water temperatures were above average (at times extreme) for the majority of the sockeye migration
- In-season MAs, with the exception of Early Stuart were not based solely on in-season environmental conditions

	Pre-season MA	In-season MA [a]
Early Stuart	102,900	229,000
Early Summer	606,600	279,300
Summer	210,900	399,400
Late	1,243,700	341,600
	2,164,100	1,249,300

[a] Final in-season MA as of October 30th 2014

In-season TAC and Catch

- The Lower Abundance Exploitation Rate (LAER) floor was implemented in-season for Early Stuart sockeye (10%)
- Significant TAC was identified for all other stock groups for directed harvest
- With the exception of Early Stuart the final in-season catches were just below the in-season TAC amounts

Management Group	Pre-season total TAC[a]	Final In-season total TAC[ab]	Final In-season Catch[c]
Early Stuart	69,800	22,600	25,600
Early Summer	2,010,400	927,700	810,500
Summer-run	3,438,900	4,813,200	4,500,500
Lates	6,988,500	5,857,900	5,393,700
Total	**12,507,600**	**11,621,400**	**10,730,300**

[a] Includes US and CDN TAC and the Canadian Aboriginal Fisheries Exemption amount of 400,000.

[b] The TAC includes LAER of 10% for Early Stuart sockeye.

[c] Catch as of October 7 2014 rounded to the nearest 100 fish.

Preliminary In-season Catch

- Significant catch in Canadian fisheries
- US catch was low relative to expectations due to a very high diversion of sockeye through the North end of Vancouver Isl.

	Fraser Sockeye [a]
Recreational	367,800
Commercial	7,930,000
FN FSC- Marine	308,600
FN FSC- Fraser	578,000
EO/Demo- Fraser	697,500
Canadian Total	**9,881,900**
Test Fishing [b]	154,000
US	694,400
Total	**10,730,300**

[a] Preliminary catch as of October 7th rounded ot the nearest 100 fish.

[b] Includes Fraser sockeye catch in Panel and non-Panel w aters

Preliminary Exploitation Rates

- Overall a small proportion of the total TAC available (US and CDN combined) was not realized (~8%).

	Pre-season [a]	Final In-season [b]
Early Stuart	26%	11%
Early Summer	50%	43%
Summer	61%	55%
Late	55%	56%
Cultus [c]	46%	53%

[a] ER is the max allowable ER based on 2014 TAM rules, pre-season pMAs, and the p50 forecast

[b] ER is based on 2014 TAM rules, in-season pMAs, the lower allowable ER, the final adopted in-season run size and in-season catch

[c] ER is assumed to be the same as similarly timed Late-run stocks

13

2014 Sockeye Post-Season

2014 General Escapement Summary

- Early Stuart and Early Summer preliminary escapement estimates are now available. Expect Summer and Late-run escapement estimates to be available in February 2015.

- The preliminary spawning escapement for Early Stuart sockeye is approximately 68,600 adults. This escapement is slightly higher than the brood year and more than double the long term average escapement for this cycle (33,275). Spawning success was well below the long term average (67% vs. 89%).

- The preliminary spawning escapement for Early Summer sockeye is approximately 643,900 adults and 1,300 jacks. This is the second highest escapement for this cycle. This escapement is only 42% of the brood year (2010 record) but well above historic observations on this cycle. Spawning success was above the long term average (93%vs 90%).

2014 Detailed Escapement Summary

- Escapements relative to the record 2010 return were mixed relative to brood; most CUs increased relative to brood
- Most escapements relative to the cycle average were similar or above and in some cases well above
- Overall sockeye were in good condition on the spawning grounds

Conservation Unit	Geography	Manage. Group	Cycle Ave	Brood	2014
Takla-Trembleur	Stuart	Early Stuart	Well Above	60,262	68,611
Chilliwack	Lower Fraser	Early Summer	Similiar [a]	Increased [a]	3,470
Nahatlatch	Lower Fraser	Early Summer	Similiar [a]	Decreased [a]	3,873
Pitt	Lower Fraser	Early Summer	Similiar [a]	Increased [a]	36,507
Shuswap	South Thompson	Early Summer	Well Above	1,428,793	499,274
Anderson-Seton	Seton-Anderson	Early Summer	Well Above	22,431	16,929
North Barriere	North Thompson	Early Summer	Above	10,808	11,467
Taseko	Chilcotin	Early Summer	Well Below	1,117	107
Francois-Nadina	Nechako	Early Summer	Well Above	26,142	61,389
Bowron	Upper Fraser	Early Summer	Well Above	8,983	12,210

[a] These stocks exhibit variable 4 and 5 year old age composition. The 2014 age composition is unknown therefore direct comparisons are difficult to make. General comparisons can be made relative to the 2010 brood year.

2014 Escapement Goals

- Although catch of Early Stuart sockeye was low the Escapement Goal was not achieved due to the high MA
- The preliminary Early Summer spawning escapement is just under the Escapement Goal

Management Group	Escapement Goal @ final in-season run size [a]	Predicted Spawn. Escapement [bc]	Prelim. Spawn. Escapement [d]
Early Stuart	108,000	66,600	68,608
Early Summer	665,000	767,300	643,908
Summer	2,852,500	3,201,300	Not Available
Late-run	3,360,000	3,818,100	Not Available
Total	***6,985,500***	***7,853,300***	

[a] Spawning Escapement Target based on adopted run size and Canada's escapement plan.

[b] DBEs are calculated from Fraser Panel adopted proportional MA values

[c] Predicted spawning escapement: Run Size - Catch to date + DBE. In-season estimates as of Oct 30 2014.

[d] Preliminary adult spawning escapement estimates (not including jacks). Preliminary Summer and Late spawning ground estimates will be available in Feb 2015.

Canada

CU Status Information

Fraser Sockeye Integrated Status

- From 2012 CSAS report, using data up to 2010.
- Integrated status for Fraser sockeye CUs are ranked from poor (red) to healthy (green).
- The designations are broader and longer term integrated evaluations of status based on metrics and auxiliary information that includes data for multiple years.
- One year's additional data will likely have little influence on status designation.
- Integrated CU Status is an important consideration for longer-term management strategies (e.g. WSP Strategy 4 pilots).
- See the following publication for more details: http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2012/2012_106-eng.html

Integrated Status Designations by Run Timing

Status	Conservation Unit	Cyclic	Stock
EARLY STUART RUN TIMING			
Red	Takla-Trembleur-EStu	cyclic	Early Stuart
EARLY SUMMER RUN TIMING			
Red	Nadina-Francois-ES		Nadina
Red*	Taseko-ES		Miscellaneous Early Summers
Red	Nahatlatch-ES		Miscellaneous Early Summers
Red	Bowron-ES		Bowron
R/A	Chilliwack-ES		Miscellaneous Early Summers
Amber	North Barriere-ES		Fennel & Miscellaneous Early Summer
Amber	Anderson-Seton-ES	cyclic	Gates
A/G	Pitt-ES		Pitt
A/G	Shuswap-ES	cyclic	Scotch, Seymour, Mis.Early Summers
? DD	Chilko-ES		Chilko
SUMMER RUN TIMING			
R/A	Francois-Fraser-S		Stellako
R/A	Quesnel-S	cyclic	Quesnel
R/A	Takla-Trembleur-Stuart-S	cyclic	Late Stuart
Amber	Kamloops-ES		Raft & Miscellaneous Early Summers
Green*	Chilko-S & Chilko-ES		Chilko
Green	Harrison River – River Type		Harrison
LATE RUN TIMING			
Red	Cultus-L		Cultus
Red	Widgeon – River		Miscellaneous Lates
Amber	Harrison (U/S)-L		Weaver
Green*	Lillooet-Harrison-L		Birkenhead
Green	Harrison (D/S)-L		Miscellaneous Lates
Green	Shuswap Complex-L	cyclic	Late Shuswap
? Undet	Seton-L	cyclic	Seton

2015 Southern B.C. IFMP Timelines

Preliminary Timelines

- 2015 Sockeye Forecasts
  - January 2015 (preliminary)
- Preliminary Summer and Late Run Spawning Escapements
  - February 2015
- CDN Escapement Plan
  - February-March 2015
- Draft IFMP
  - Written priority discussion Items January 26th
  - Draft IFMP March 2nd ,2015
  - Target Release early June