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Fishery Planning Issues for Fraser Sockeye and Pink Salmon 2013

FORUM Meeting,

February 26-27, 2013

Canada

Challenges

The Forecast: (Probability that run size will be equal to or less than)

Mgt. Group	P25	P50	P75	Mean Run Size all years	Mean Run Size 2013 cycle
Early Stu	137,000	211,000	331,000	311,000	792,000
Early Summer	130,000	253,000	468,000	478,000	274,000
Summer	2,095,000	3,718,000	6,663,000	3,822,000	6,791,000
Lates	293,000	583,000	1,133,000	2,960,000	834,000
Pinks	6,401,000	8,926,000	12,473,000	12,580,000	12,580,000

Early Stuart

- 2013 would be dominant cycle year for Early Stuart sockeye but returns will likely be below 2013 cycle average return of 792K(forecast range: *92 to 507K, median: 211K*);
- 2009 brood year escapement (21,900 effective female spawners) was 2nd lowest observed on this cycle - but spawning success (95%) was slightly higher than the long-term average (89%).
- Comprise a very small proportion of total sockeye forecast at p50 ~ 4.4%.
- Early July peak migration.
- Implications of the escapement strategy for fishing plans will be strongly influenced by in-season run size estimates and management adjustments (MAs) for environmental conditions.
- If in-season abundance and/or MAs indicate no TAC for Early Stuart, have implemented a 3 wk rolling window closure. There is potential for additional restrictions if projected return is very low (below escapement target), to protect $\geq$ 90% of the run.

Early Summers

- 1 in 2 chance returns will exceed 2013 cycle average return of 274K (forecast range: *73 to 844K, median: 253K*); Will comprise a very small proportion of total sockeye forecast based on p50 – about 5.3%.
- The mid-point of the pre-season forecast (p50) is close to mean run size for the 2013 cycle, however directed harvest opportunities may be limited depending on MA.
- At p75 the forecast is close to mean returns for all years.
- Late July-early August timing. One week window closure has been used in past to address poor returns of the earliest timed stocks in this run timing group.
- Variable forecasts for individual stocks (relative to stock cycle avg):.
  - Gates – strong
  - Fennell, Scotch and Seymour – moderate
  - Bowron, Pitt & Nadina – weak, well below cycle average
- Implications of the escapement strategy for fishing plans will be strongly influenced by in-season run size estimates and management adjustments (MAs) for environmental conditions as well as Early Stuart management approach. One week window closure has been used in past to address poor returns of the earliest stocks in this run timing group. If no Early Stuart window closure and E summers are weak may need for additional actions.

Summers

- Summer Run sockeye make up a majority (78%) of the 2013 run size forecast and will be focus of harvest opportunities. Cycle average is 6.8 million; forecast range of 1.2 to 12.1 million, median is 3.7 million.
- Timing – early August, overlapping with Early Summers.
- Harvest may be limited by constraints on co-migrating stocks of concern.
- Variable forecasts for individual stocks (relative to stock cycle avg):
  - Chilko and Raft – strong (but Raft a small contributor)
  - Stellako and Harrison – moderate, with uncertainty around Harrison given limited data on returns for large spawner abundances that occurred in brood years.
  - Late Stuart - weak (cyclic stock and this would be a dominant year)
  - Quesnel – normally the dominant component of the timing group but even the p75 forecast is well below the mean run size for this cycle line. May no longer be a dominant cycle – a factor to consider.

Lates

- Total return of Late Run (excluding Harrison) in 2009 was the third smallest return on this cycle since the 1950s, but total escapement in the 2009 brood year was the third largest on this cycle.
- Late Run sockeye make up a small proportion of the 2013 run size forecast (~ 12% of the total return at p50 forecast).
- Cycle average is 834K, forecast range of 167K to 2.1 million; median of 583K
- Timing is mid-late August - Historically, ocean migration timing of Late Run Sockeye was similar to Summer Run but Late Run delayed river entry by 4-6 weeks.
- Since mid-1990s, Late Run sockeye have entered the Fraser River much earlier, and have experienced very high levels of en-route and/or pre-spawn mortality. I
- 2009-2011: the Late Run delay off the river mouth had increased to approximately two weeks.
- In 2012, there was little to no delay. *Planning for 2013 will need to make assumptions about what the delay will be*.

Lates Cont'd.

- Variable forecasts for individual stocks:
  - Birkenhead, Weaver and Late Shuswap are forecast to be the most abundant stocks.
  - Cultus, Late Shuswap are moderate (but below average for the 2013 cycle)
  - Birkenhead near average
  - Portage and Weaver are weak relative to the 2013 cycle.
- Cultus will continue to shape management of the Late aggregate.

Cultus

- Management will be based on the Cultus Lake sockeye recovery objectives and assessment of in-season information for the Late Run sockeye stock aggregate.

Cultus Cont'd.

- Due to the low numbers compared with co-migrating stocks, exploitation rate for Cultus sockeye will be assumed to be the same as for similarly timed Late Run stocks caught seaward of the confluence of Fraser and Vedder Rivers.
- Exploitation rates are based on DNA analysis of sockeye sampled directly from fisheries or from nearby test fisheries. Cultus difficult to detect.
- Hatchery production and captive brood program provide significant contributions.
- Pike minnow removal and other efforts ongoing to help strengthen the CU.

Pink Salmon

- At the p50 forecast, should meet spawning escapement goal of 6 million, with some abundance available for harvest.
- Considerable uncertainty around the forecast.
- Conservation constraints for co-migrating stocks of concern (e.g. Late run and Cultus sockeye, Interior Fraser coho and Interior Fraser steelhead) will likely constrain the ability to harvest all available Fraser River Pink TAC identified in-season.

Summary of Planning Issues

- Summer Run stocks, particularly Chilko & Quesnel, contribute 78% to the total return forecast, whereas Late Run (12%), Early Summer (5%) and Early Stuart Run stocks (4%) each contribute considerably less.
- The Harrison 2013 forecast is particularly uncertain, and returns for this stock could fall outside the forecast range.
- Fisheries in 2013 will likely focus on Summer Run sockeye, and pink salmon.
- Extent and magnitude of any fisheries will be based on in-season assessment information.
- Will need to manage impacts on other management groupings.
- Access to Summer Run sockeye TAC will likely be constrained by management requirements for Early Summer and Late Run stocks and will be balanced by interest in harvesting Fraser pinks - timing can overlap with Late Run sockeye.

Summary Cont'd

- Coho may result in additional constraints on Late Run and Pink harvests. Window closure in the Fraser River to protect coho starting in the Fraser River after Labour Day (Sept. 2, 2012). Selective fishing techniques required.
- If no Late Run sockeye TAC available:
  - Work with a Low Abundance Exploitation Rate for Lates (to be determined in Escapement Plan) and use to manage opportunities in Summer Run sockeye and pink fisheries?
  - Selective pink fisheries (location, gear type, etc.), with release of sockeye and accounting for fishery-induced mortality as per 2011.
- Moving shares up/down river:
  - Working to develop approach

Sharing Sockeye TAC - considerations

- May be necessary with respect to Early Stuarts, Early Summers, and Lates.
- Same options exist for sharing as discussed in previous years.

Guidelines:

1. All planned harvest will remain within conservation constraints.
2. The entire TAC of the run timing group that is the conservation constraint will be planned to harvested and accounted for (fishery induced mortality).

Past Methods for Sharing FSC

- Early Stuart Sharing arrangement
  - Developed in 1996
  - for Early Stuart only
- Methods that assisted with decision making in 2008 & 2009 (in no particular order):
  - proportional sharing of constraining stocks
  - group that is furthest behind target is allocated more of the constraining stocks
  - keep to strict proportional sharing of catch
  - multi-step approach to combine above with assessment of fish distribution in BCI

Note: no *single* one of these was used in either year, rather, results from all methods were examined to make decisions

Sharing FSC - Early Stuart

- Sharing agreement from 1996
  - general approach: first priority to FN groups with limited to no access to other SK stocks
    - first 5,000 EStu TAC to Carrier-Sekani
    - rest of EStu TAC shared between remaining in-river FNs
    - two different suites of sharing arrangements based on EStu TAC greater or less than defined threshold.
  - applied on a more geographically discrete scale than other methods discussed.

Next Steps

- DRAFT IFMP anticipated later this week.
- First Nations will need to consider Escapement Plan options i.e. implications for conservation and harvest opportunities.
- Will likely be a need to implement sharing arrangements for one or more of the management groupings – input on approach is welcome.