# Update on the Southern BC Chinook Initiative

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# Objectives

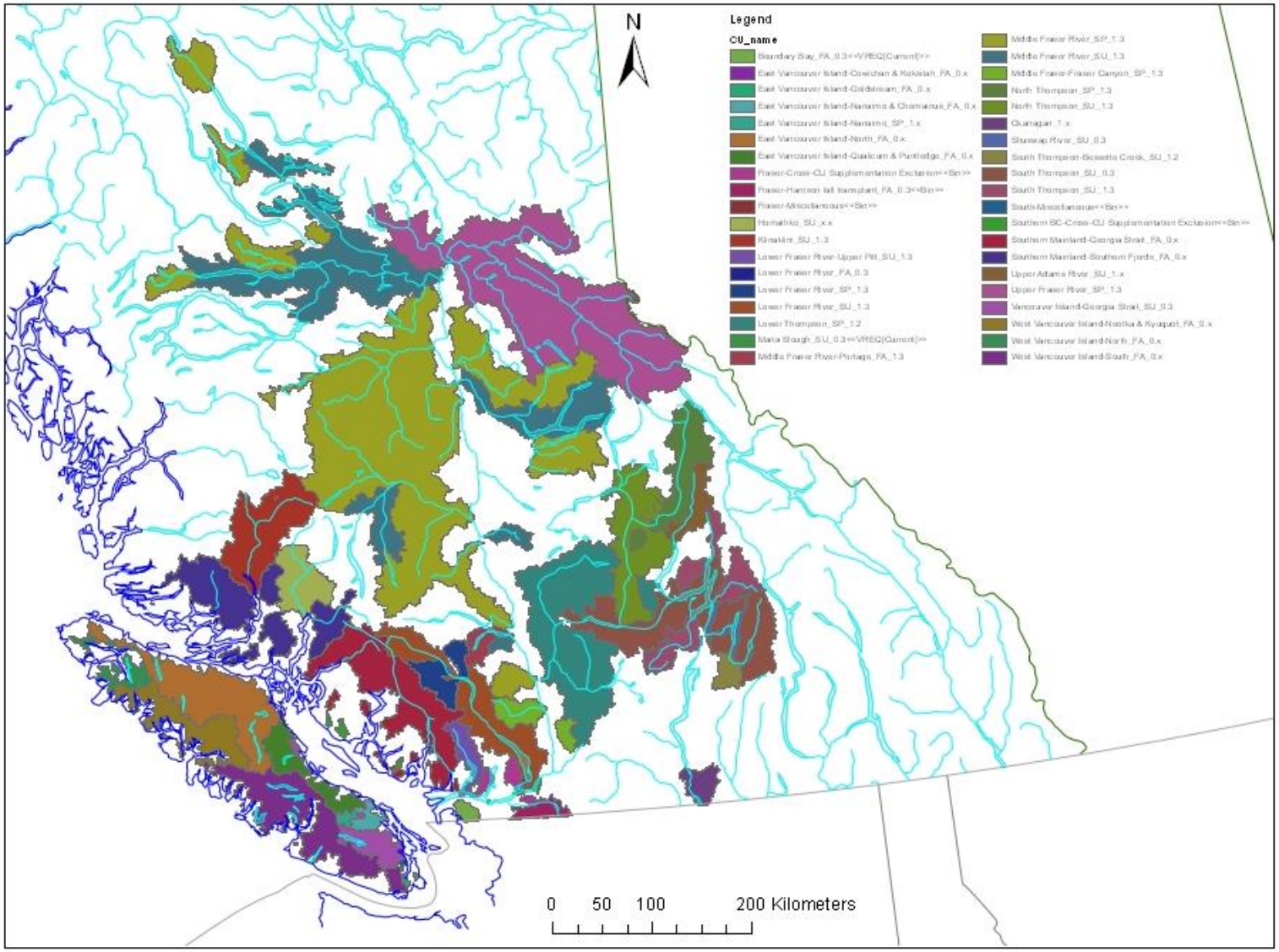
- To develop a strategic plan for Ministerial consideration to address the decline of Chinook salmon populations in southern B.C. This initiative will focus on the collaboration of multiple stakeholders and multiple DFO sectors to identify rebuilding actions related to fisheries management, salmonid enhancement and habitat restoration.
- Deliverables from this process will be incorporated into existing DFO planning processes including Integrated Fisheries Management Planning, fish culture production planning and habitat restoration work plans. This strategic plan will be developed in a manner consistent with Strategy 4 of the Wild Salmon Policy, the Rebuilding Guidelines of the Precautionary Approach Framework and the Species at Risk Act (pending Ministerial listing decision).

(from Southern BC Chinook Strategic Planning Initiative Terms of Reference)

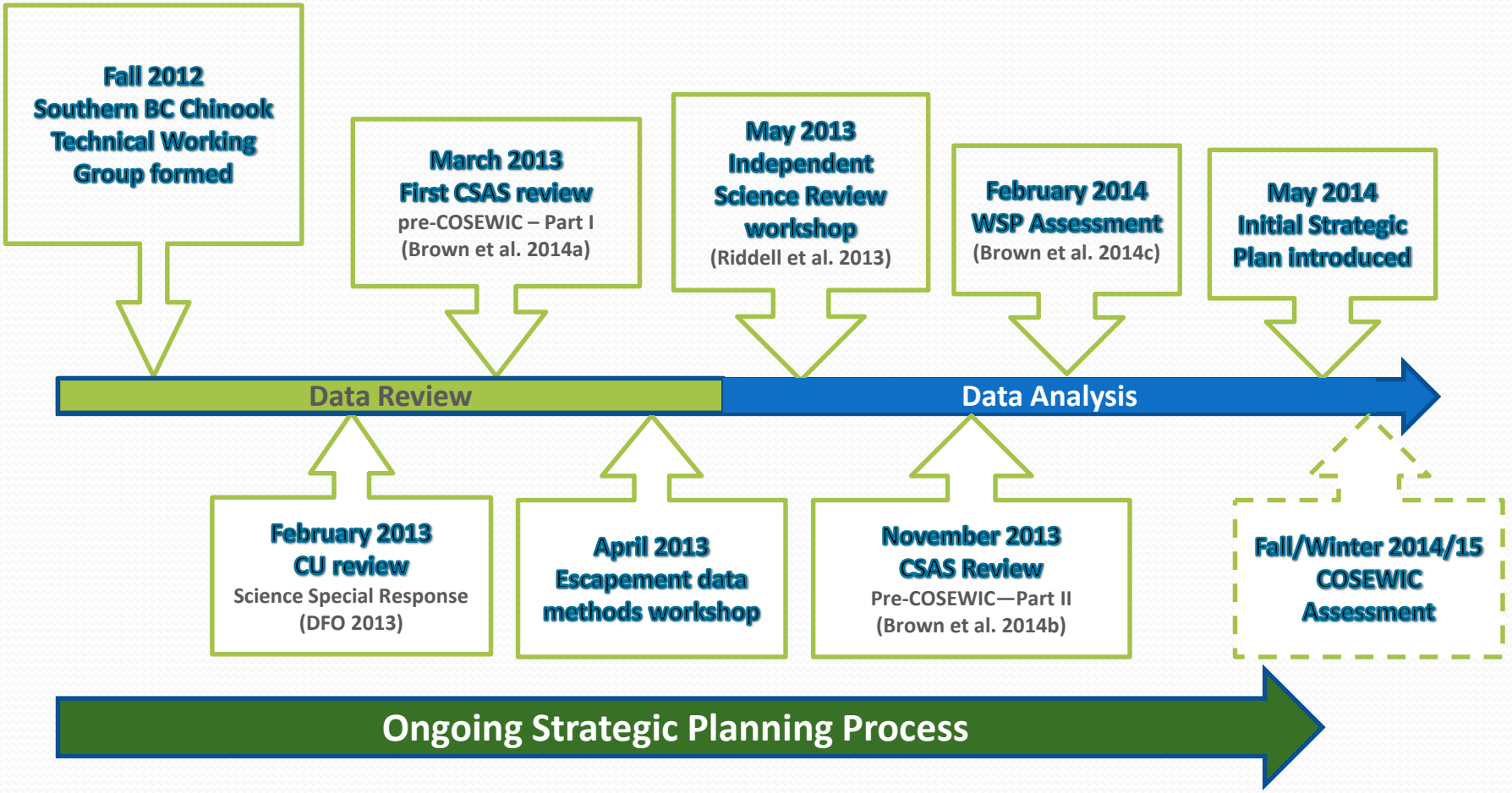
# Deliverables

- Review & Update Conservation Units (DFO 2013)
- Pre-COSEWIC review (Part I and Part II, in revision)
- WSP Assessment (in revision)
- Strategic Plan (first iteration, May 2014)

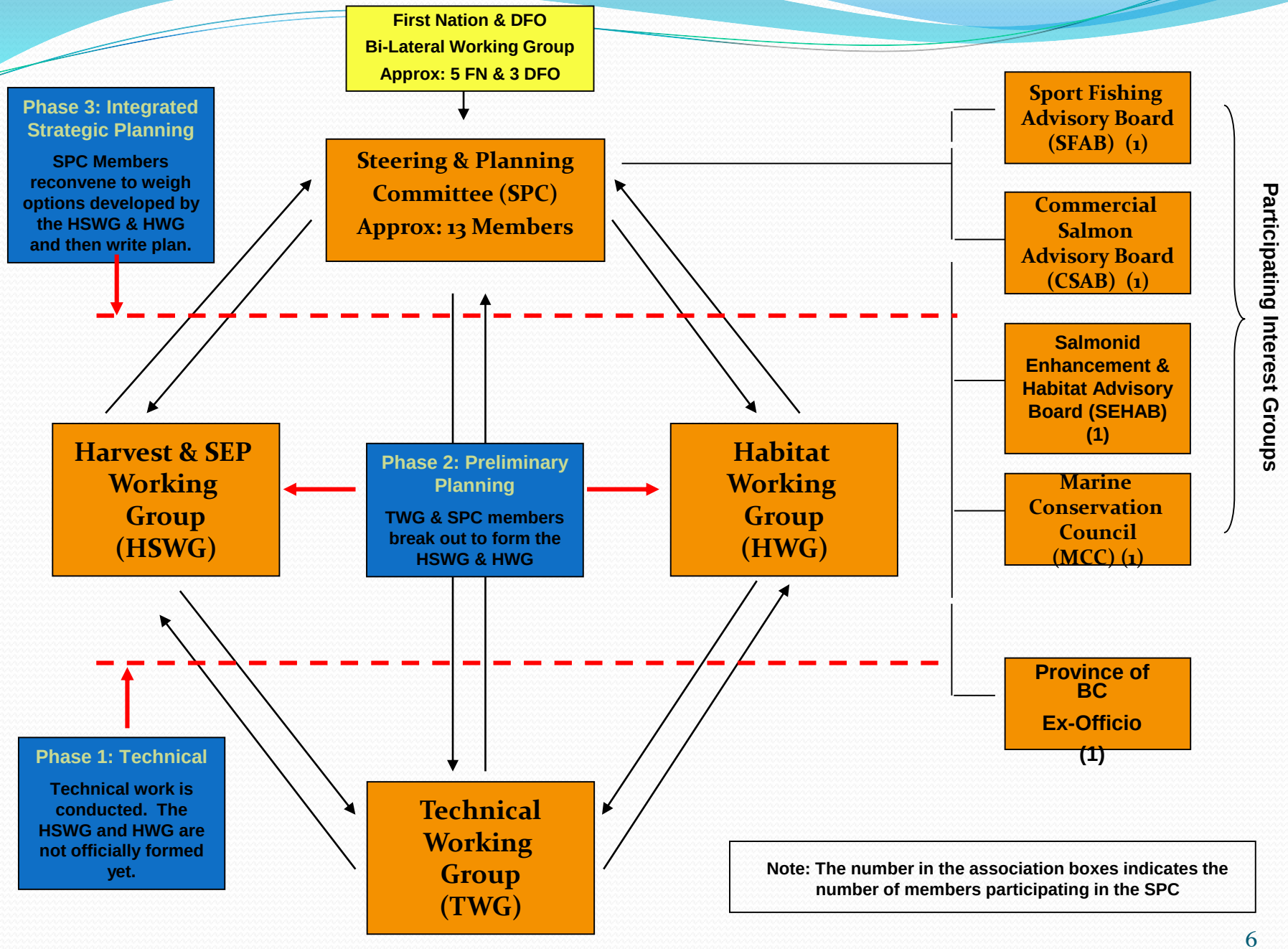
# Southern BC Chinook Conservation Units



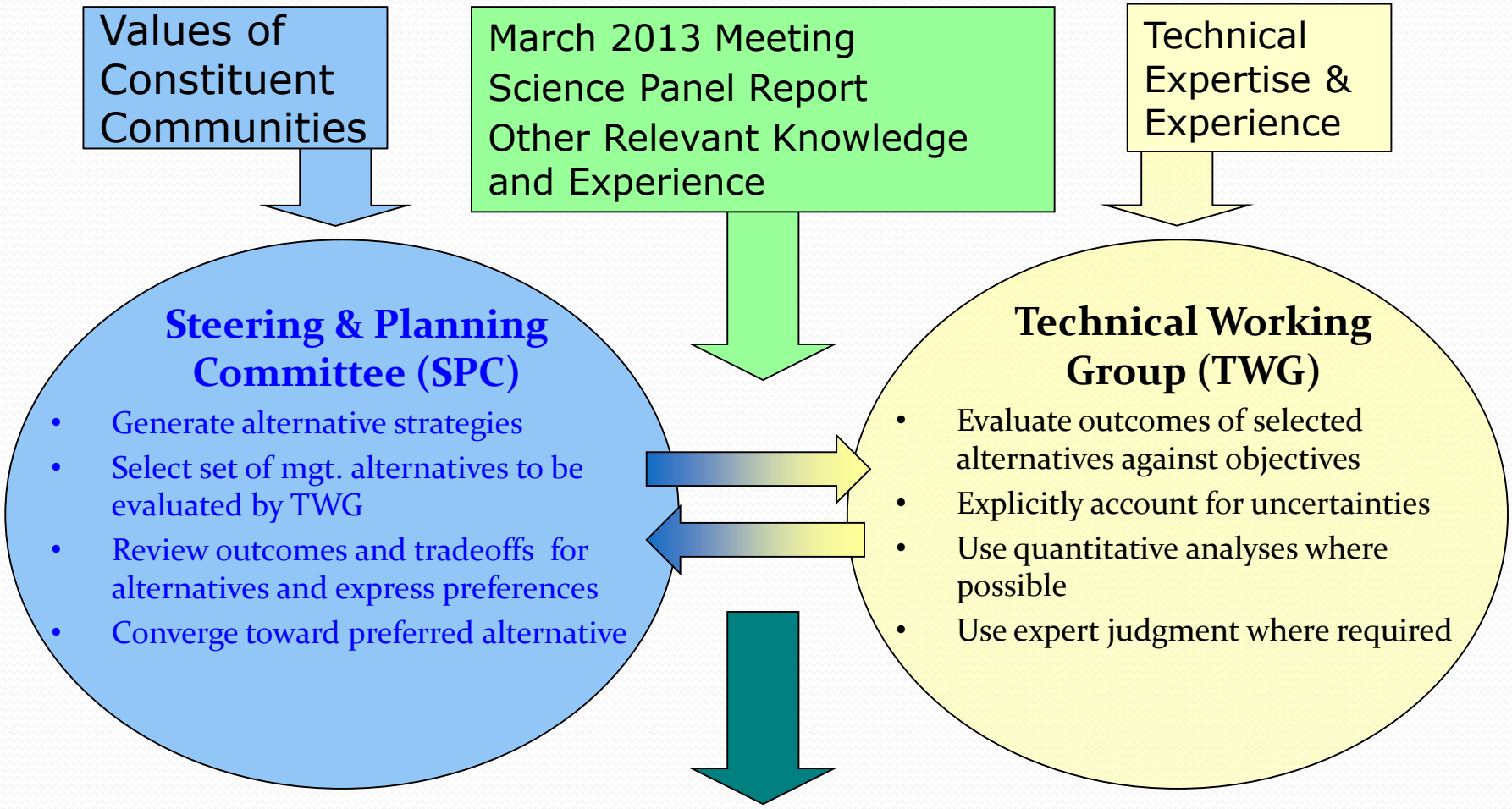
# Timeline of Events



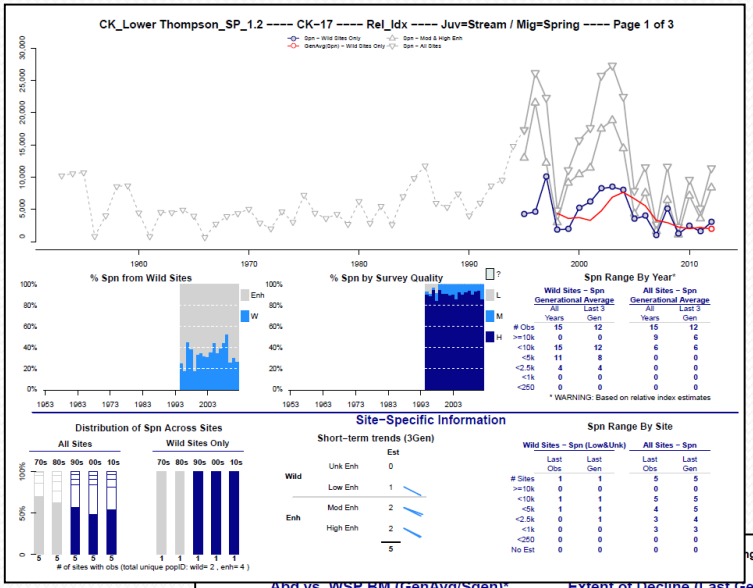
# The Southern BC Chinook Strategic Planning Initiative

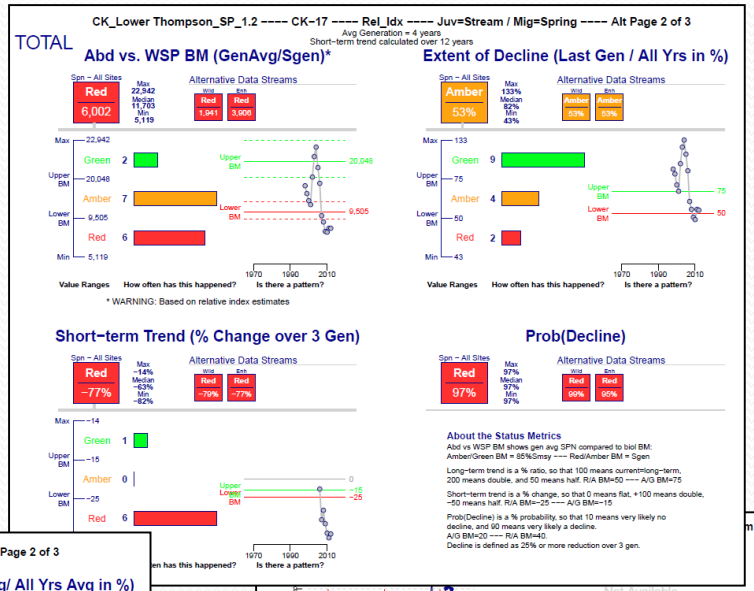


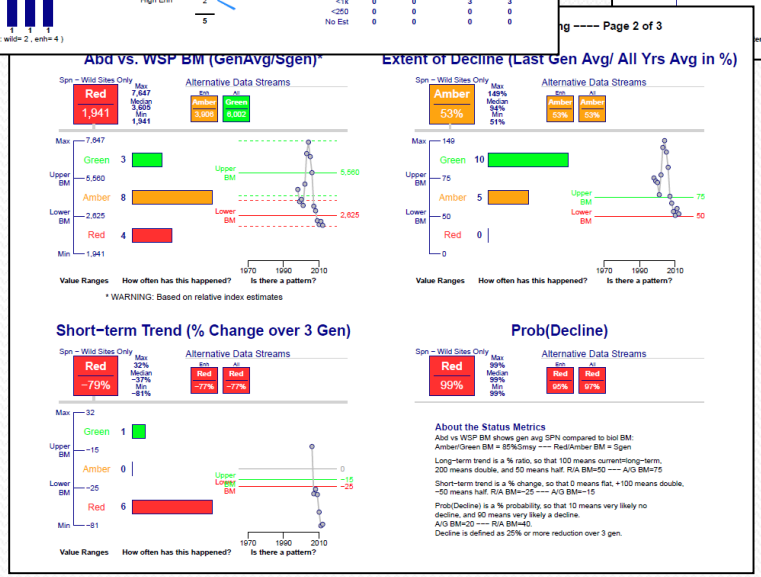
# Relationship between SPC and TWG

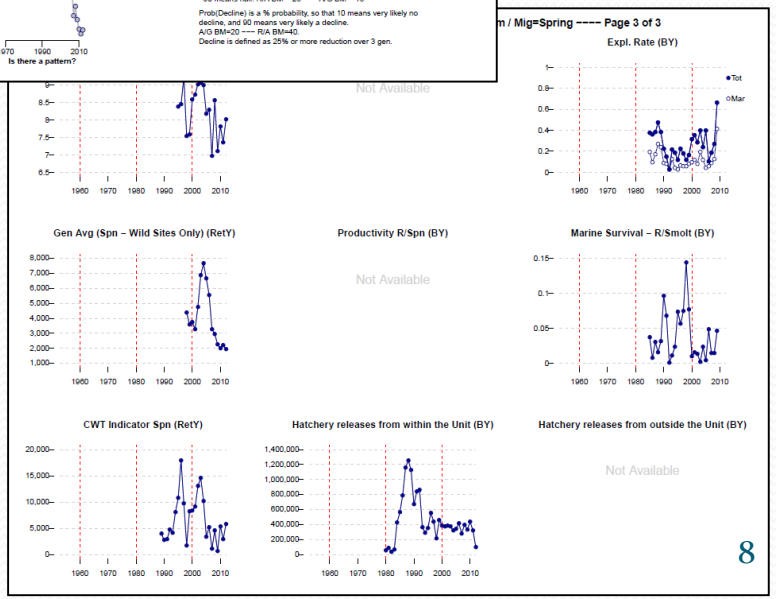


# Preliminary steps: Data Review & Synthesis



# Wild Salmon Policy (WSP)
# 5-Step Planning Process

# WSP Status Assessment

## Objectives:

1. Determine an integrated WSP status for each southern BC Chinook Salmon Conservation Unit;
2. Indicate the effect on the status assessments of including and excluding enhanced Chinook salmon contributions ;
3. Provide advice on data and methods required for assessing the status of any Conservation Units that are currently data deficient;
4. Include Conservation Unit-specific information on fishing mortality in the information provided for status assessment, where possible;
5. Provide advice on the appropriate frequency of status re-assessment, changes in monitoring variables that could invoke early re-assessment, and appropriate timing for assessment relative to data availability.
6. Identify and recommend data management approaches required to support recommended changes to re-assessment of CUs.

# The Process to Determine Integrated Status

- A standardized integration algorithm did not emerge from this workshop - similar to Fraser River Sockeye WSP assessment test case.
- Expert opinion is key (to interpret each metric in the context of other CU information, and to interpret the suite of metrics as a whole and provide supporting commentary.
- A series of integration guidelines continues to evolve. Initially developed during the Fraser River Sockeye WSP assessment, the guidelines were further refined and expanded based on unique challenges with the southern BC Chinook data.

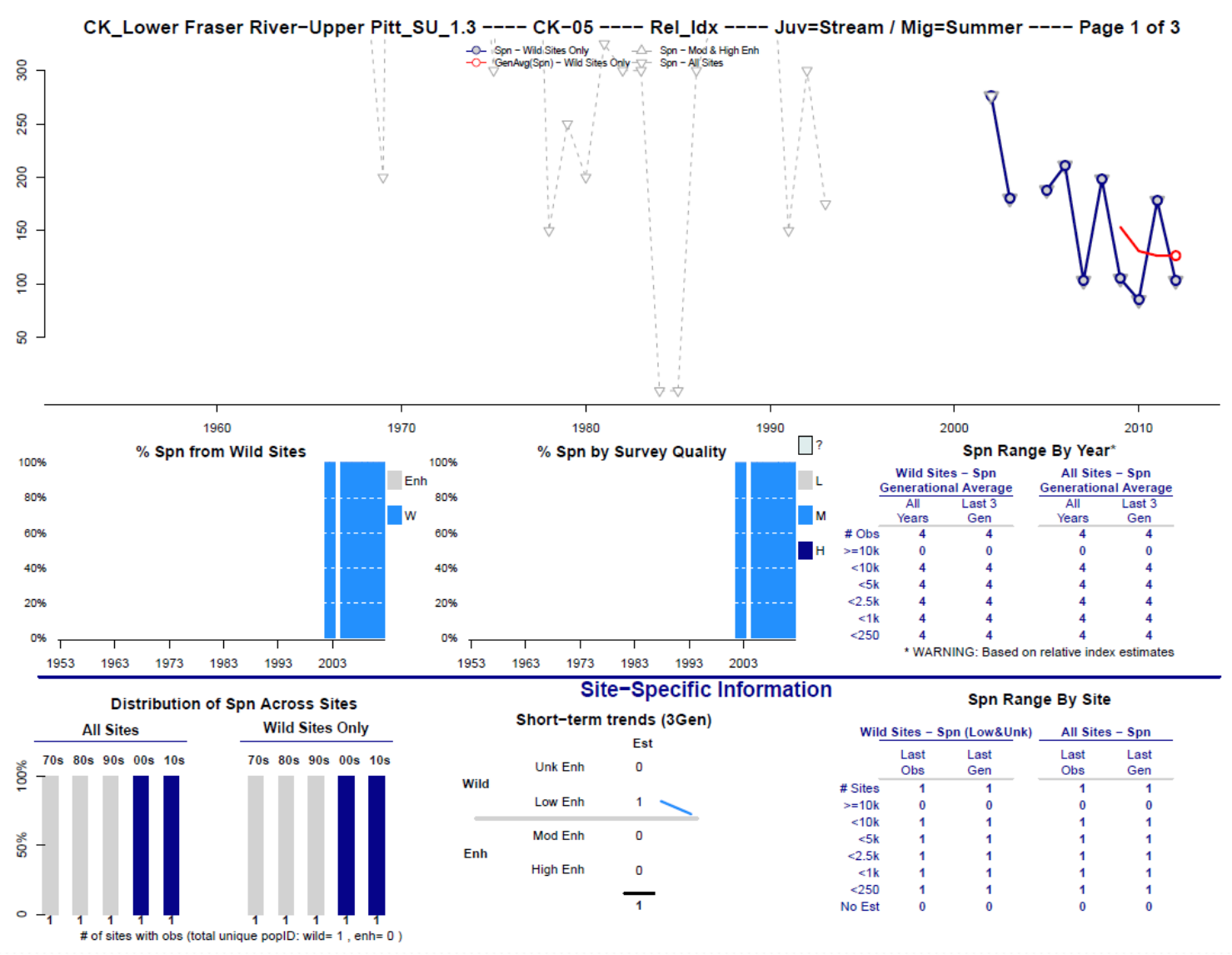
# 12 Status Integration Guidelines

1. *Note whether the escapement time series is an absolute abundance or a relative index.*
2. *Escapement data availability for the most recent period is consistent over time within a CU.*
3. *Escapement data quality for the most recent period is variable among sites and between years within a CU.*
4. *Data representativeness is variable between CUs.*
5. *Where available, marine survival rate time series may provide context for interpreting trends in abundance.*
6. *Where available, exploitation rate time series may provide context for interpreting trends in abundance.*

# 12 Status Integration Guidelines (cont'd)

7. *Habitat-based abundance benchmarks are more relevant for wild CUs than Total Units that include enhancement.*
8. *Metric results that are highly variable over time within a CU should be given less weight than more consistent ones.*
9. *"Wild" actually means "low" plus "unknown" enhancement.*
10. *CUs with absolute abundances below COSEWIC criterion D were considered in the red zone, independent of status indicated by other WSP metrics.*
11. *Data representativeness: assign DD status when only a small portion of total sites are monitored, especially if sites exhibit divergent short-term trends.*
12. *Quantity of data: assign DD status when there is very little data (or no data) available.*

# Example of a Data Deficient CU



# CK-05 (continued)

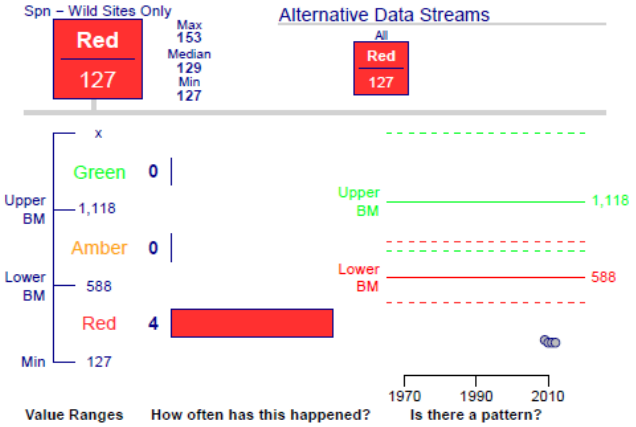
CK_Lower Fraser River−Upper Pitt_SU_1.3 ---- CK−05 ---- Rel_Idx ---- Juv=Stream / Mig=Summer ---- Page 2 of 3

Avg Generation = 5 years

Short−term trend calculated over 15 years

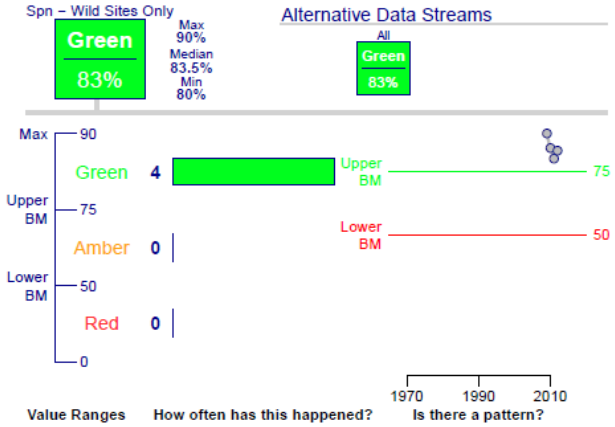
WILD

## Abd vs. WSP BM (GenAvg/Sgen)*

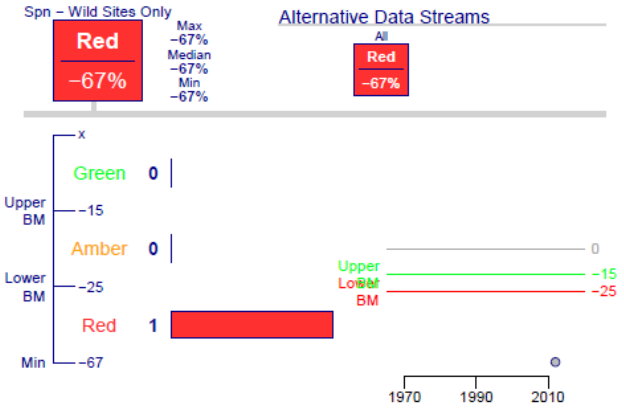



* WARNING: Based on relative index estimates

## Extent of Decline (Last Gen Avg/ All Yrs Avg in %)




## Short−term Trend* (% Change over 3 Gen)




* WARNING: the current estimate is calculated despite missing data

## Prob(Decline)


### About the Status Metrics

Abd vs WSP BM shows gen avg SPN compared to biol BM:
Amber/Green BM = 85%Smsy --- Red/Amber BM = Sgen

Long−term trend is a % ratio, so that 100 means current=long−term, 200 means double, and 50 means half. R/A BM=50 --- A/G BM=75

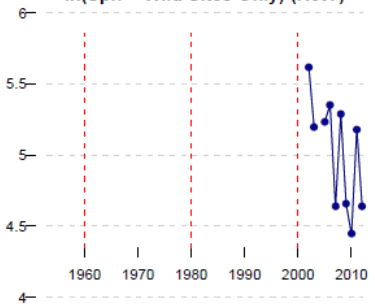
Short−term trend is a % change, so that 0 means flat, +100 means double, −50 means half. R/A BM=−25 --- A/G BM=−15

Prob(Decline) is a % probability, so that 10 means very likely no decline, and 90 means very likely a decline.
A/G BM=20 --- R/A BM=40.
Decline is defined as 25% or more reduction over 3 gen.

# CK-05 (continued)

CK_Lower Fraser River−Upper Pitt_SU_1.3 ---- CK−05 ---- Rel_Idx ---- Juv=Stream / Mig=Summer ---- Page 3 of 3

ln(Spn − Wild Sites Only) (RetY)



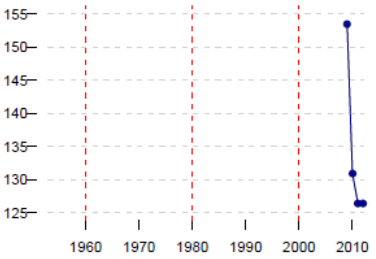

Total Return (BY)

Not Available

Expl. Rate (BY)

Not Available

Gen Avg (Spn − Wild Sites Only) (RetY)




Productivity R/Spn (BY)

Not Available

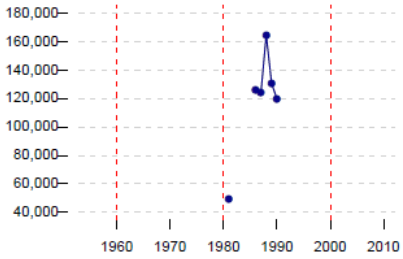
Marine Survival − R/Smolt (BY)

Not Available

CWT Indicator Spn (RetY)

Not Available

Hatchery releases from within the Unit (BY)




Hatchery releases from outside the Unit (BY)

Not Available

# Results of WSP Status Assessment

## Integrated status evaluation completed (15 Cus)

| Integrated Status | Case # | CU_ID | CU Name | Area |
|---|---|---|---|---|
| RED | 1 | CK-10 | Middle Fraser River_SP_1.3 | Fraser |
| RED | 4 | CK-18 | North Thompson_SP_1.3 | Fraser |
| RED | 6 | CK-19 | North Thompson_SU_1.3 | Fraser |
| RED | 11 | CK-09 | Middle Fraser River-Portage_FA_1.3 | Fraser |
| RED | 24 | CK-17 | Lower Thompson_SP_1.2 | Fraser |
| RED | 25 | CK-31 | West Vancouver Island-South_FA_0.x | WCVI |
| RED | 26 | CK-12 | Upper Fraser River_SP_1.3 | Fraser |
| RED | 29 | CK-29 | East Vancouver Island-North_FA_0.x | WCVI |
| RED | 30 | CK-32 | West Vancouver Island-Nootka & Kyuquot_FA_0.x | WCVI |
| RED* | 3 | CK-16 | South Thompson-Bessette Creek_SU_1.2 | Fraser |
| RED* | 5 | CK-01 | Okanagan_1.x | Columbia |
| RED/AMBER | 27 | CK-14 | South Thompson_SU_1.3 | Fraser |
| AMBER | 12 | CK-11 | Middle Fraser River_SU_1.3 | Fraser |
| GREEN(p) | 9 | CK-03 | Lower Fraser River_FA_0.3 | Fraser |
| GREEN | 2 | CK-13 | South Thompson_SU_0.3 | Fraser |

(p) means provisional, and identifies cases where some participants held divergent views.
* means that CU definition should be reviewed

# Results of WSP Status Assessment

## Integrated status evaluation not possible (9 Data Deficient CUs)

| Integrated Status | Case # | CU_ID | CU Name | Area |
|---|---|---|---|---|
| DD | 7 | CK-82 | Upper Adams River_SU_x.x | Fraser |
| DD | 8 | CK-06 | Lower Fraser River_SU_1.3 | Fraser |
| DD | 10 | CK-05 | Lower Fraser River-Upper Pitt_SU_1.3 | Fraser |
| DD | 28 | CK-28 | Southern Mainland-Southern Fjords_FA_0.x | Inner SC |
| DD | 31 | CK-08 | Middle Fraser-Fraser Canyon_SP_1.3 | Fraser |
| DD | 32 | CK-20 | Southern Mainland-Georgia Strait_FA_0.x | Inner SC |
| DD | 33 | CK-34 | Homathko_SU_x.x | Inner SC |
| DD | 34 | CK-23 | East Vancouver Island-Nanaimo_SP_1.x | Inner SC |
| DD | 35 | CK-35 | Klinaklini_SU_1.3 | Inner SC |

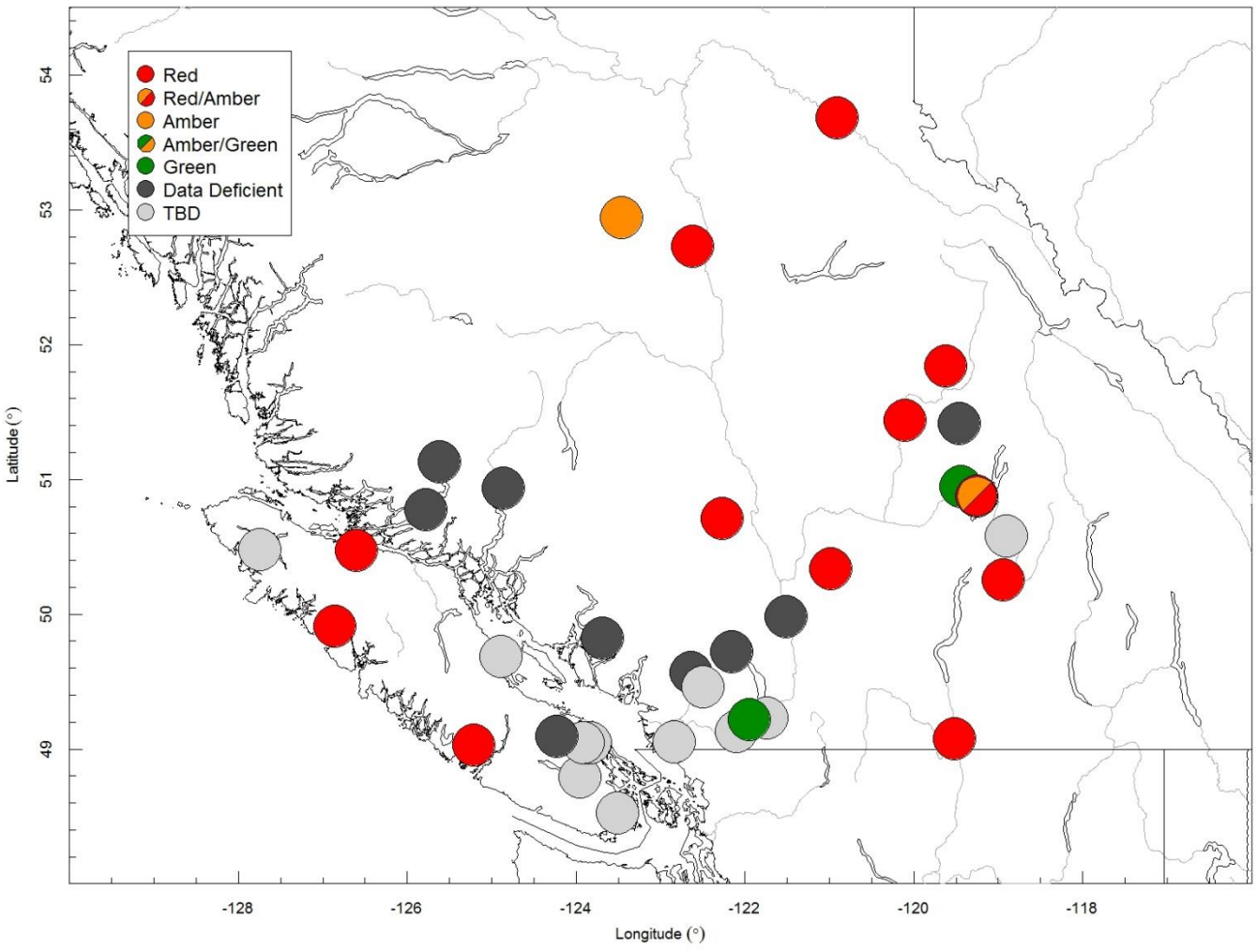
# Results of WSP Status Assessment

## Integrated status evaluation not possible (TBD for 11 CUs)

| Integrated Status | Case # | CU_ID | CU Name | Area |
|---|---|---|---|---|
| TBD** | 13 | CK-04 | Lower Fraser River_SP_1.3 | Fraser |
| TBD | 14 | CK-21 | East Vancouver Island-Goldstream_FA_0.x | Inner SC |
| TBD | 15 | CK-33 | West Vancouver Island-North_FA_0.x | WCVI |
| TBD | 16 | CK-22 | East Vancouver Island-Cowichan & Koksilah_FA_0.x | Inner SC |
| TBD | 17 | CK-02 | Boundary Bay_FA_0.3 | Inner SC |
| TBD | 18 | CK-07 | Maria Slough_SU_0.3 | Fraser |
| TBD | 19 | CK-25 | East Vancouver Island-Nanaimo & Chemainus_FA_0.x | Inner SC |
| TBD | 20 | CK-15 | Shuswap River_SU_0.3 | Fraser |
| TBD | 21 | CK-83 | East Vancouver Island-Georgia Strait_SU_0.3 | Inner SC |
| TBD | 22 | CK-27 | East Vancouver Island-Qualicum & Puntledge_FA_0.x | Inner SC |
| TBD | 23 | CK-9008 | Fraser-Harrison fall transplant_FA_0.3 | Fraser |

** means that CU status should be re-evaluated after review of enhancement level definition

# Results of WSP Status Assessment



# Challenges & Next Steps

- Data Issues - Continued data compilation, update & review
  - Looking forward, need to develop a process to handle data deficient CUs?
  - Database investment:  Additional review of historical data to maximize its utility
- Policy Direction on Enhancement:  How to deal with enhancement within a WSP context?
  - Not possible to differentiate  wild salmon from enhanced salmon, based on WSP definition of “wild”.
  - Potential interactions between a CU and the associated EU through processes such as straying, competition for food and increased fishery impacts on the CU due to the abundance of enhanced fish.
  - Genetic effects of enhanced populations on wild fish populations over time are not well understood.

# Strategic Planning Process

- Conducted by Compass (2013) and ESSA (2014)
- Planning process led by First Nations and DFO
- Collaboration from multiple interest groups

Goal

*"… to assist the SPC and TWG in working through a **first iteration of the WSP five-step planning process**, applied to the long-term strategic planning for Southern BC Chinook salmon."*

Objective

To develop an Integrated Strategic Plan:

- accounts for the **biological status**
- addresses **causes of recent declines** in productivity and abundance
- identifies **management actions** to improve status

# Results of the Strategic Planning Process

- "Convergence" ≠ consensus
- Pursue both hatchery and harvest actions
- Habitat improvement is valuable component
  - Disagree on extent of potential benefit
- Importance of Learning Strategies
- Need to establish new indicator stock in U/M Fraser / Thompson
- Importance of CWT info – maintain & review
- What are the risks and benefits of hatcheries
- How does hatchery production affect harvest levels in different fisheries
- Enhance monitoring of catch, encounter, discard
- Develop integrated model to evaluate fishery, place and time specific changes