CSPI – Summary of the Strategic Plan

Goal Statement: To restore and maintain the abundance, distribution and diversity of southern BC Chinook salmon for all that rely on them.

1 Introduction

Chinook salmon are very important to British Columbia -- ecologically, economically, and socially. Unfortunately, many Chinook salmon stocks in southern BC have shown decreases in abundance, repeatedly low escapements, and/or declines in fishery catches, especially over the last fifteen years. Although a small number of stocks have continued to be highly productive and/or increased substantially during this period, the dominant pattern has been one of declines. This is a broad pattern, affecting stocks in a range of geographic areas including the Fraser River, the Strait of Georgia and the West Coast of Vancouver Island. These populations are facing a number of potential challenges, including: depressed and/or declining spawner abundance; reduced and variable freshwater and marine survival rates; high uncertainty about future production; pressures on freshwater habitat; total mortalities associated with harvest; increased predation; and ecosystem effects from climate changes.

Although there are some exceptions to the general patterns, the decline of many southern BC Chinook populations is a significant concern for First Nations, the Canadian public, commercial and recreational fishers, and conservation groups and the impacts of declining Chinook abundance are far reaching. While the status of Chinook is a conservation concern at the level of Conservation Units, local Chinook populations are of great importance to First Nations for access to food, social and ceremonial harvest opportunities, which have been negatively affected. Harvest restrictions and closures have been implemented in the commercial and recreational fisheries, with resulting economic and social impacts.

Furthermore, the current state of knowledge is highly variable across southern BC Chinook populations, some of which have excellent information and data but many have considerable gaps in knowledge. There is a critical need to increase learning and to strengthen the knowledge base.

2 The Chinook Strategic Planning Initiative

The Strategic Plan is nested under the auspices of the Southern BC Chinook Strategic Planning Initiative (CSPI), a bilateral planning process led by First Nations and DFO, with collaboration from multiple interest groups. A DFO/First Nations bilateral steering committee oversees the overall process. The Steering and Planning Committee (SPC) is responsible for the governance of the CSPI process, as per the Terms of Reference, and providing guidance for the development of the Strategic Plan. The SPC includes representatives from First Nations, DFO, the recreational and commercial fishing sectors, and non-governmental organizations. Within the governance structure of the CSPI, the SPC also oversees the activities of the Technical Working Group (TWG), which is composed of scientists and technical experts from DFO, First Nations and other interested parties. The TWG coordinates scientific analyses to evaluate the status of Southern BC Chinook, examines causes for their decline and will continue to support the strategic planning process (e.g. developing performance indicators, analyzing options developed by the SPC, and synthesizing results to facilitate decisions by the SPC).

The major deliverables of the CSPI included: (1) a special science response document on CU definitions, (2) the pre-COSEWIC assessment report, (3) the independent science panel report, and (4) the present integrated strategic plan.

Overall, the challenge for the CSPI is to apply existing knowledge and tools to find the most effective, acceptable strategies to recovering and protecting Chinook stocks in southern BC, while recognizing the reality of substantial (and possibly increasing) constraints on the available resources (e.g., people, funding, capital) for implementing such strategies. Given substantial knowledge gaps, likely future changes in climate and the productivity of ecosystems, uncertainties in the consequences of various management actions, and complex dynamics of the entire socio-ecological system, the strategies provided by the Strategic Plan must recognize and promote the need for learning, adaptation and precaution.

3 Overarching Goals

The goals of the WSP, the CSPI and the Strategic Plan are linked and nested.

Policy or Process	Goals	Objectives
WSP	Restore and maintain healthy and diverse salmon populations and their habitats for the benefit and enjoyment of the people of Canada in perpetuity.	1. Conserve the diversity, distribution and abundance of wild Pacific salmon[1] 2. Maintain habitat and ecosystem integrity 3. Manage fisheries for sustainable benefits
CSPI	Develop an Integrated Strategic Plan that accounts for the biological status of southern BC Chinook conservation units, their habitat and the ecosystem, that addresses the causes of any declines, and identifies the management strategies necessary to remedy their status where possible.	Deliverables from the CSPI process will provide guidance to annual Integrated Fisheries Management Plans, fish culture production plans, habitat restoration work plans, rebuilding plans, and community partnership agreements where possible. It may also inform Pacific Salmon Treaty discussions between Canada and the United States.
Strategic Plan	To restore and maintain the abundance, distribution and diversity of southern BC Chinook salmon for all that rely on them.	Biological/ecological, social, and economic objectives and strategies developed within the Plan.

4 About the Plan

The Strategic Plan is intended, by definition, to provide **high-level strategies** for the improved management of Chinook salmon in southern BC. The Plan is not intended to address tactical planning or specific management actions, but rather to provide strategic guidance and direction to existing, finer scale planning processes where such tactical actions are determined, implemented and refined.

The **intended audience** for this Strategic Plan is very broad and inclusive – all parties with direct/indirect interests in sustaining robust and diverse populations of Chinook salmon and/or influence over management decisions that may potentially affect such populations. Such parties include groups within all levels of government (federal, First Nations, provincial and municipal), as well as other public and private interests.

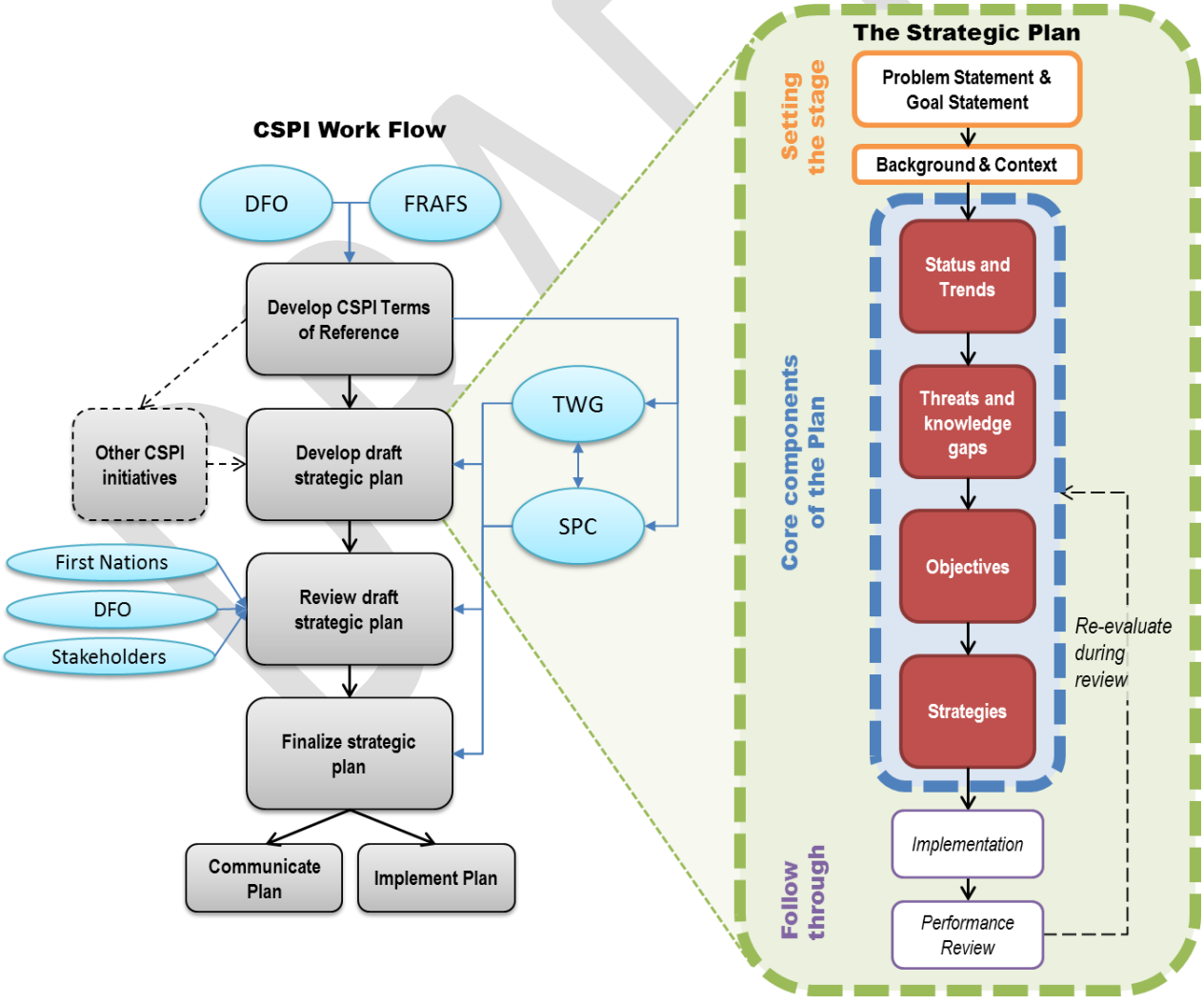
[1] This is a broader interpretation of WSP Objective 1: “Safeguard the genetic diversity of wild Pacific salmon”.

The predominant **spatial scale** of the Strategic Plan is the aggregate level of all southern BC Chinook CUs. Status, trends and current assessment levels are presented at a CU-specific scale. Limiting factors and threats are described in terms of their relevance to subsets of CUs. However, knowledge gaps, objectives, the strategies, and implementation are addressed at the aggregate level.

The **temporal scale** is multi-faceted. Although the basis for concern may extend further, the trends examined in the plan are over the past three generations of Chinook. The plan has been developed in the context of thinking about two different timeframes: (1) the next two generations of Chinook, especially with respect to the implementation of strategies and quick responses anticipated from some strategies; and (2) up to eight generations of Chinook, with respect to longer-term responses to strategies and the overall goal of broad recovery across all CUs.

5 Schematic Diagram of CSPI Process and Plan

The diagram below conceptually represents the broad process of developing the Strategic Plan (left side) and the structure of the Plan (right side).



6 Status and Trends of Southern BC Chinook Salmon

There is general agreement across all quantitative assessments that spawner abundances of most Conservation Units (CUs) of Chinook salmon in southern BC have decreased over the most recent three fish generations (i.e., the last 12 years for CUs with a four-year average generation time). The map below shows trends in spawner abundance for each of the southern BC Chinook CUs. These data and analyses come from work done within both the WSP and COSEWIC assessment frameworks.

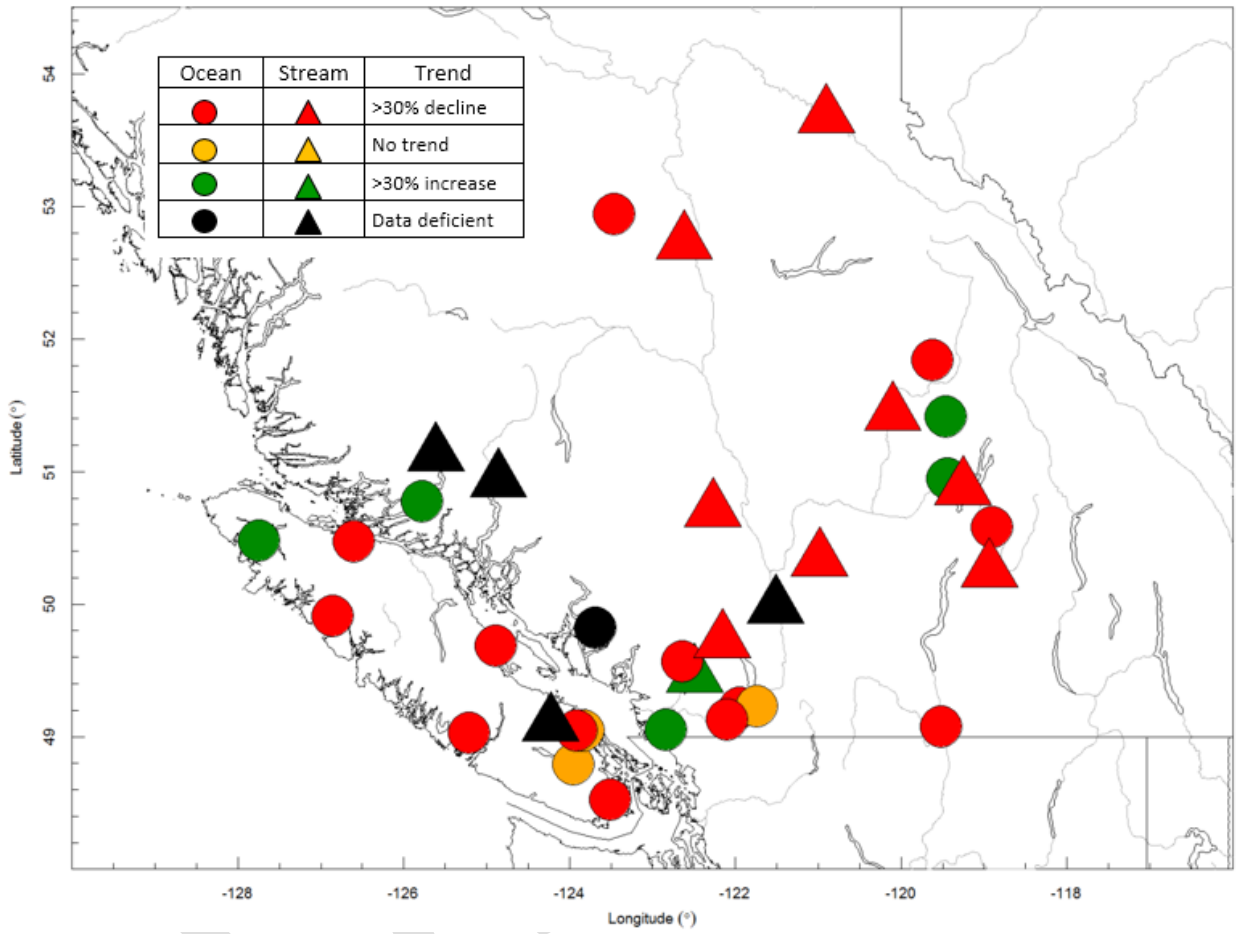


Figure 1. Three-generation trends in spawner abundance for southern BC Chinook conservation units (CUs), differentiated by ocean (circle) and stream (triangle) types of juvenile life histories. The number of years included in the calculation of 3 generations depends on the average age of maturity for each CU. Given that southern BC Chinook Salmon most often mature between 3 and 5 years of age (on average), the number of years used to calculate the trends illustrated here varies between 9 and 15 years (2004-2012 or 1998-2012).

The WSP assessment of integrated biological status of Southern BC Chinook was completed in 2016. The COSEWIC assessment is not yet completed and publicly available.

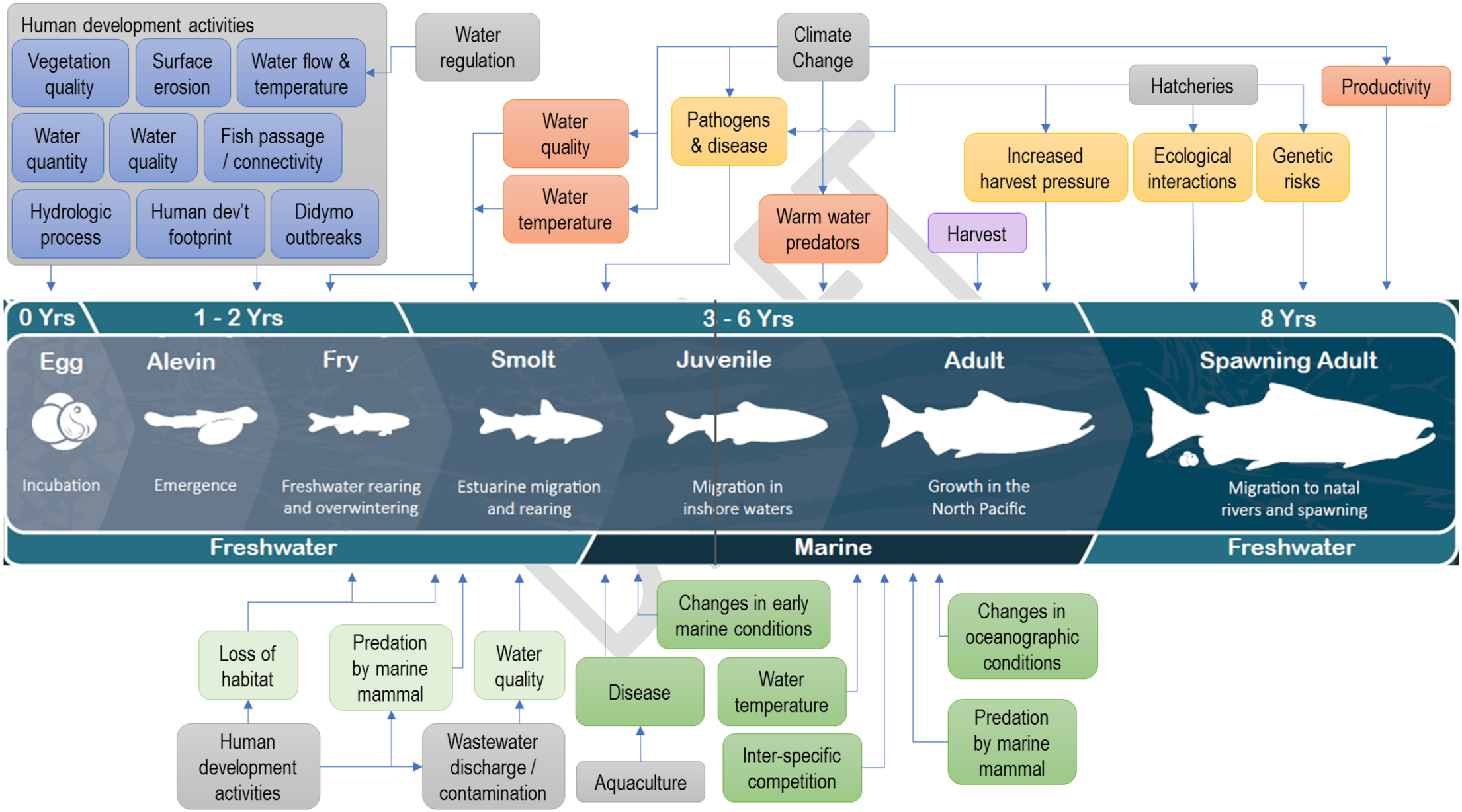
7 Objectives of SPC

The biological, social and economic objectives of the SPC are shown below, nested under the relevant objectives of the WSP. The proposed means objectives provide direction on approaches for achieving the fundamental objectives. Candidate indicators and performance measures for each of these objectives are outlined in the strategic plan.

WSP Object.	SPC Fundamental Objectives	Proposed Means Objectives
1. Habitat and Ecosystem Integrity		
Maintain habitat and ecosystem integrity	Sustain freshwater habitat carrying capacity	Increase the *quantity* of freshwater habitat (carrying capacity) in CUs where that appears to be a factor limiting freshwater production (e.g., remove barriers to allow Chinook to access high quality habitat)
	Sustain salmon contribution to ecosystem health	Maintain or improve the *quality* of habitat attributes that are critical to local freshwater production of Chinook salmon
		Ensure that there are sufficient Chinook post-harvest to sustain Chinook-dependent predators
		Ensure that Chinook harvests are not harming Resident Killer Whale populations
2. Conservation		
Safeguard the genetic diversity of wild Pacific salmon	At least sustain and preferably improve overall (wild and enhanced) salmon abundance	Ensure that total fishing mortality rates remain below level required to reach MSY
		Maintain spawner abundance above escapement goals or WSP benchmarks (where available) and/or maintain positive trend in spawner abundance
		Maintain stock status in green zone
	At least sustain and preferably improve wild salmon abundance	Maintain harvest rates below harvest objectives or fishery reference points
	At least sustain and preferably improve salmon spawning distribution	Maintain viable numbers of Chinook spawners across all historic spawning areas
	Sustain genetic diversity	Preserve or enhance genetic diversity through hatchery programs
		Minimize the negative impacts of enhancement on the genetic diversity of wild Chinook populations in areas of potential concern (currently Strait of Georgia (SoG) and WCVI).
3. International – Pacific Salmon Treaty (PST)		
Fisheries and Benefits	*n/a – The SPC did not identify any fundamental objectives that align with this category; however, the PST outlines three central principles in Article III.*	Maintain harvest below Total Allowable Catch (TAC) ceilings that are developed based on Aggregate Abundance Based Management (AABM) objectives according to schedule in Pacific Salmon Treaty (PST)
		Individual Stock Based Management (ISBM) objectives
4. First Nations (WSP Principle: Honour obligations to First Nations)		
Fisheries and Benefits	At least sustain and preferably increase aboriginal FSC harvest abundance	Realize intended harvest opportunities for First Nations, consistent with Allocation priority that recognizes that after conservation, First Nations' FSC fisheries have priority.
	At least sustain and preferably increase aboriginal FSC harvest distribution	
5. Recreational		
Fisheries and Benefits	Maintain or enrich recreational fishery experience	Maintain or enhance recreational fishery opportunities while adhering to Allocation priorities for conservation and FN FSC.
	Maintain or increase recreational fishery net revenue	
	Maintain or increase recreational fishery employment	
6. Commercial (including FN economic/demo fisheries)		
Fisheries and Benefits	Maintain or increase commercial fishery net revenue	Maintain or enhance commercial harvest opportunities while adhering to Allocation priorities of conservation, FN FSC, and recreational fisheries.
	Maintain or increase commercial fishery employment	
7. Other		
Fisheries and Benefits	Reduce management uncertainty	Show improvements over time in the achievement of biological, social and economic objectives and performance measures.
	Reduce management costs	Increase cost effectiveness of management as stocks recover (e.g., increasing the ratio of total returns of wild Chinook to southern BC CUs to total Chinook management costs)
[*other*]	Sustain connection with salmon	Increase the number of people involved in fishing for Chinook, in recovery of Chinook salmon populations and in watershed protection or restoration

8 Conceptual model ****** THIS IS STILL DRAFT (core is copied from elsewhere) *****

The conceptual model illustrates the major threats and stressors identified in the Strategic Plan with respect to the life cycle of Chinook salmon.



9 Strategies

The SPC and TWG developed a set of proposed strategies for achieving the objectives of the plan and thus addressing the threats and knowledge gaps identified in the plan.

Process strategies provide overarching direction for the implementation of the overall Plan and individual learning or action strategies.

Learning and action strategies provide direction for management actions or research activities within particular domains.

The descriptions in the table below capture the essence of each strategy. The strategic plan provides the detailed description of each strategy and its associated subcomponents, as well as some examples of specific actions that could be included in its implementation. Furthermore, the plan outlines several important points that must be considered when reviewing and interpreting the strategies.

PROCESS STRATEGIES	
COMMUNICATION, INFORMATION AND COLLABORATION	
Strategy 1	Develop a communication plan for outreach and education about the Strategic Plan
Strategy 2	Develop and implement a data sharing plan
Strategy 3	Promote and encourage local and regional collaborative relationships
Strategy 4	Integrate Aboriginal Traditional and Local Ecological Knowledge
ASSESSING THE BENEFITS, COSTS AND EFFECTIVENESS OF ACTIONS	
Strategy 5	Implement action-based strategies in a way that allows learning about the effectiveness of actions
Strategy 6	Assess benefits and costs with respect to all affected groups and interested parties
LEARNING AND ACTION STRATEGIES	
MARINE HABITAT AND ECOSYSTEM	
Strategy 7	Protect marine and estuarine habitat important to Chinook salmon
Strategy 8	Improve understanding threats and limiting factors in early marine and estuarine habitats and mitigate
Strategy 9	Improve understanding and mitigation of impacts of disease on Chinook salmon
FRESHWATER HABITAT AND ECOSYSTEM	
Strategy 10	Protect freshwater habitat across CUs, migratory routes and rearing areas to support resilience and diversity
Strategy 11	Identify and remedy threats to freshwater habitat
Strategy 12	Integrate information on upstream and pre-spawn mortality into harvest planning
SIGNIFICANT PROJECTS OR INCREMENTAL/CUMULATIVE DEVELOPMENT	
Strategy 13	Include salmon and salmon habitat as focal area of environmental and cumulative impact assessments
HATCHERY PRODUCTION AND HATCHERY-BASED INDICATOR STOCKS	
Strategy 14	Align production with approved program objectives and monitoring requirements
Strategy 15	Develop/maintain an effective, integrated network of hatchery indicator stocks
Strategy 16	Assess the risks of hatchery programs on spawning/rearing success of wild salmon
Strategy 17	Assess the benefits of production on harvest opportunities and stock rebuilding
Strategy 18	Determine the appropriate level of precaution or risk aversion for CUs or aggregates
Strategy 19	Evaluate the merits of adding new hatchery production, where appropriate

HARVEST	
Strategy 20	Ensure that fishing related mortality does not exceed sustainable removal rates
Strategy 21	Develop an integrated model to evaluate the effects of changes in harvest
Strategy 22	Conduct monitoring and evaluation to assess fishery related mortalities
CLIMATE CHANGE	
Strategy 23	Assess the potential impacts of climate change on Chinook salmon
Strategy 24	Identify opportunities to adapt to the effects of climate change on Chinook salmon
ADDITIONAL MONITORING TO ASSESS STATUS AND TRENDS	
Strategy 25	Develop a network of indicator stocks to represent wild Chinook management units
Strategy 26	Review and incorporate historic information into current data sets
Strategy 27	Monitor CU status and progress toward WSP benchmarks and/or other biological benchmarks

The anticipated benefits of the strategies are summarized in the table below:

Strategies		Anticipated Benefits
Communication, information and collaboration	**1-4**	More comprehensive actions across multiple stakeholders and where required, First Nations, to preserve and recover Chinook CUs; more constituencies speaking and acting on behalf of Chinook.
Benefits, costs and effectiveness of actions	**5**	Stronger evidence for evaluating and adjusting management actions.
	6	More comprehensive understanding of the magnitude and distribution of benefits and costs associated with strategies or actions.
Marine habitat and ecosystem	**7**	Increase survival and/or halt the decline in survival by improving habitat conditions or reducing specific threats.
	8	improve the understanding, tools and effectiveness of Chinook management; develop more realistic/accurate estimates of early marine mortality
	9	Improve understanding and management of a potential stressor and issue of public concern.
Freshwater habitat and ecosystem	**10-11**	Healthy and diverse freshwater habitats, supporting healthy and diverse Chinook populations.
	12	Reduce risk of overharvesting, ensure adequate spawning to sustain populations.
Significant projects / cumulative devel't	**13**	Reduce the risk of harm to Chinook populations and their habitats.
Hatchery production	**14-19**	Better alignment of hatchery production with approved hatchery objectives and regional monitoring requirements, an improved monitoring program, and increased learning about the effects of hatchery practices.
Harvest	**20-22**	Improved alignment of fishing mortality with current stock productivity to support improved status and trends of Chinook populations in many CUs, while allowing sustainable harvest.
Climate change	**23-24**	Greater chances of having Chinook persist and recover despite the effects of climate change.
Additional monitoring	**25-27**	Better informed fish management decisions and increased probability of CU persistence and recovery.

10 Implementation

The Strategic Plan includes a proposed general structure and key principles for implementation. However, the development of a more detailed implementation plan will require its own process.

Implementing the Strategic Plan: Implementation is the crux of all planning efforts. Successful implementation of the Southern BC Chinook Strategic Plan will require both a widespread understanding of the strategy, a commitment to its implementation, and integration of strategic content across multiple scales, entities and processes. Implementation goes beyond the scope of the Terms of Reference of the CSPI. As yet, there is not an established entity nor governance process to promote, coordinate and monitor implementation of the Chinook strategy, and to incorporate elements of the strategy into existing processes and institutions. However, there is a logical sequence of tasks inherent in the set of strategies, which creates a foundation for implementation. The Plan provides draft structures for implementation plans on two time scales: 1) a very broad implementation plan for the next 20 years (see below); and 2) a more detailed implementation plan for the next 5 years (see Plan).

Timeline for Implementation of Southern BC Chinook Strategic Plan

TASK	1st generation of Chinook					2nd generation of Chinook					3rd generation of Chinook					4th generation of Chinook				
Year →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Networking to publicize draft plan, develop partnerships																				
2. Integrate plan into key processes and entities																				
3. Analytical tasks to operationalize actions under the plan[1]																				
4. Distribution, presentation and publication of final plan																				
5. Implement plan's harvest, habitat and hatchery actions			Pilot projects -->																	
6. Monitoring, research and evaluation to support plan																				
7. Annual updates on progress	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
8. 5-year reviews and updates of the plan																				

High Intensity
Low intensity
5-year review and updates of plan
♦ Annual updates on progress & symposium

[1] Includes various analytical tasks to better understand the impacts and benefits of alternative harvest, habitat and hatchery actions. More intensive analytical tasks will be repeated every 5 years as part of the 5-year review.

Performance Review: The Plan proposes that there be annual reports on progress and that a more intensive review and adjustment of the Plan should occur every 5 years. The 5-year reviews will form a high-level cycle of adaptive management at the scale of the overall Plan.