



Executive Secretary's Summary of Decisions 2017 Fall Meeting

The Pacific Salmon Commission held its 2017 Fall Meeting from October 23-26, 2017 at the Clearwater Resort (Suquamish, WA), and discussed a number of topics (see attached agenda).

The Commission AGREED:

1. The February 2017 minutes are approved, as reviewed in May 2017.
2. It will revisit the CTC feasibility assessment of the expert panel's recommendations on forecasting methodologies, with additional discussion in January 2018 as needed.
3. The Executive Secretary will liaise with the FSRC to facilitate a final report to the Commission in January 2018, arrange necessary teleconferences, and establish communication with the Fraser River Panel as required.
4. The U.S. proposal to have the CTC complete a template for exchanging pre-season forecast information will be revisited at the November 2017 negotiation session, as part of the CTC's 2017/2018 work plan finalization.
5. The Executive Secretary will ask the Joint Fund Committee to provide the Commission with a) the total list of 2018 Very High Priority Chinook Projects proposed, and b) the results of the joint technical review of those projects as soon as practical after the January meeting week.
6. The instructions to the Panels and Committees on 2017-2018 work plans are approved, noting:
 - a. The CSC work plan is approved with the following caveats:
 - i. Item 1 is still under discussion, but element A may proceed. In implementing element A, consideration should be given to post-season rather than in-season compilation of environmental anomalies. Elements B1 and B2 may be raised at a later date, pending Commission discussion; however, the element is not currently approved as a task of the CSC. For element C, item C.2. may proceed on a periodic basis, not annually and pending funding. For element D, the Executive Secretary is approved for participation in the IYS North Pacific Steering Committee; however, there is not a role for the CSC regarding element D.
 - ii. The RFID and "emerging scientific issues" meetings should both be conducted at the 2018 Annual Meeting in February for efficiency and cost-savings.
 - b. The Northern Panel work plan is approved, and is subject to further discussions between the Parties and the Panel leadership on Chapter 2 language. Additionally, reference to Chapter 7 should be struck and replaced with reference to Attachment B within the work plan.

7. The CTC work plan will be forwarded to the CIG for setting priorities among the various tasks at the January post-season meeting
8. The slate of officers is approved, noting the U.S. chair of SFEC will be determined as soon as possible.
9. The report from the CTC Function and Operations Working Group is accepted, and the group will continue to meet to further the recommendations.
10. The report from the Negotiations Team is accepted, with a written summary of recent discussions to be provided for the record.

ATTENDANCE
PACIFIC SALMON COMMISSION
FALL MEETING
OCTOBER 23-27, 2017
CLEARWATER CASINO RESORT
SUQUAMISH, WASHINGTON

COMMISSIONERS

CANADA

R. Reid (Chair)
S. Farlinger
J. McCulloch
B. Rezansoff
P. Sprout

UNITED STATES

C. Swanton (Vice Chair)
W.R. Allen
P. Anderson
W. Auger
R. Klumph
M. Oatman
B. Turner



**Draft Agenda - Fall Meeting
October 23-27, 2017
Clearwater Casino & Resort
Suquamish, WA**

1. Adoption of Agenda
2. Executive Secretary's Report

Action Items Pending

3. Approval of minutes: February 2017 (record of *in camera* decision May 2017)
4. Executive Secretary's update on all "special issue" committees
5. Chinook issues
 - a. Forecast methodology review: revisit CTC feasibility report (as per February 2017 decision)
 - b. Status of transition to new model
6. Fraser Strategic Review Committee: final report
7. Committee on Scientific Cooperation
 - a. Revised proposal for tracking anomalies (as per February 2017 agreement)
 - b. International Year of the Salmon: involvement of the Executive Secretary

Panels and Committees

8. Presentation of annual work plans
9. Instructions to Panels and Committees

Other Business

10. Approval of officers for 2017/18
11. Report from Negotiating Team
12. Public comments as needed



Oct 18, 2017

MEMORANDUM

TO: PSC Commissioners

Cc: Southern Fund Committee

FROM: Northern Fund Committee

RE: Very High Priority Chinook Projects: The 2018 Northern Fund Process.
An update from the Northern Fund Committee to the Pacific Salmon Commission.

1. Guided by the recommendations of the Pacific Salmon Commission and the Chinook Technical Committee (CTC), the Northern Fund Committee solicited proposals for very high priority chinook (VHPC) projects as a component of its 2018 Call for Project Proposals issued on June 30th 2017. Below is the list of 2018 priority activity themes included in the Call for Proposals for projects to support the implementation of Annex IV, Chapter 3.
 - Sampling in fisheries and escapements, lab processing, and data reporting to support the recovery of adequate numbers of Coded Wire Tags (CWT) to support estimation of precise statistics produced by the cohort analysis procedure.
 - Coded Wire Tagging of CTC exploitation rate indicator stocks (single index tagging and double index tagging) designed to improve the quality and quantity of CWT data identified in PSC CWT guidelines.
 - Continued or improved estimates of catch, terminal returns, forecasts and escapements to meet CTC data standards.
 - Development of additional escapement goals and stock-specific exploitation rate management objectives needed to implement the Chinook management regime.
 - PSC Coast Wide Chinook model and Exploitation Rate Analysis improvements.
 - Improvement of methods for stock and fishery assessments (e.g., estimation of spatial/temporal stock-age distribution, projection of maturation rates for incomplete broods, systematic evaluation of current analytical methods using the Data Generation Model).

The Northern Fund Committee issued their 2018 Call for Proposals on 30 June 2017.

2. The deadline for submission of first round project concepts from proponents seeking funding for projects in 2018 passed at midnight (24:00) on Monday 4th September 2017.

A total of 94 conceptual proposals were received, requesting \$6.68 million US. Included were 21 conceptual proposals that addressed the priority activity themes to support the implementation of Annex IV, Chapter 3 as recommended by the Commissioners and the CTC.

After screening the proposals for accuracy and completeness and individually numbering and listing each proposal, all the conceptual proposals were distributed to the members of the Northern Fund Committee and their technical advisors by 4:20 pm on September 7th 2017.

In addition to project proposals submitted directly to the Northern Fund Committee for consideration, VHPC project proposals submitted in response to the Southern Fund Committee's concurrent Call for Proposals were also included. The inclusion was requested by the Northern Fund Committee to ensure its members could apprise themselves of the full suite of VHPC proposals seeking funding in 2018, both in Northern and Southern Fund eligible project jurisdictions. This approach also enables the Northern Fund Committee recognize VHPC projects that may be seeking financial support from both funds, or to identify projects that could be considered for joint (shared) funding contributions from the Northern and Southern Funds.

3. Between September 7th 2017 and October 2nd 2017, the Northern Fund Committee members and their technical advisors reviewed each conceptual proposal evaluating:
 - their relevance and significance to the goals and objectives of the Northern Fund in 2018;
 - each proposal's technical merit; and,
 - the cost of each proposal based on their initial budget forecasts.
4. The Northern Fund Committee, their technical advisors and PSC Secretariat Fund staff met in person in Vancouver, BC on October 2nd and 3rd to review and select project concepts to be invited to proceed to the second stage of the review process, namely the development of Detailed Proposals and Budgets.

In total 68 conceptual proposals were selected to proceed to the second round. The total grant amount requested was \$4.9 million US.

Included among the 68 were 19 VHPC proposals invited to the second round. The total dollar value of grants requested by these 19 VHPC proposals was \$1.695 million US.

In addition to the above, the Northern Fund Committee was informed by the PSC Secretariat Fund staff that the Southern Fund Committee, at their proposal review meeting held in mid-September, had selected 10 VHPC proposals submitted to that Committee requesting \$987,000 US in 2018.

The complete list of 68 conceptual proposals including the 19 Northern Fund VHPC proposals and with the addition of the 10 Southern Fund VHPC proposals is attached in Appendix 1.

5. All proponents invited to proceed to the second round of the 2018 selection process will have until November 19th 2017 to prepare and deliver their Detailed Proposals and Budgets to PSC Secretariat Fund staff in Vancouver.
6. Following the November 19th deadline, PSC Secretariat Fund staff will screen all the Detailed Proposals and distribute them to the members of the Northern Fund Committee and their technical advisors.

An in-depth technical review by Northern Fund Committee members and technical advisors. will take place during the months of December 2017 and January 2018. A bilateral Northern Fund technical

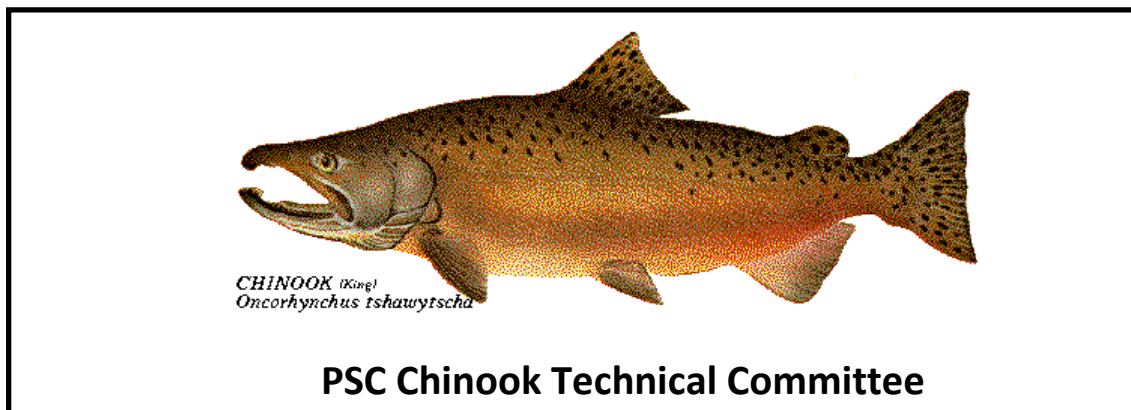
meeting will take place in Portland in January 2018 to provide the opportunity for Northern Fund technical advisors from each national section to discuss the initial results of respective technical reviews. At the direction of the Northern Fund Committee, this step will also include a technical review of the VHPC projects submitted to the Southern Fund for consideration.

7. The Northern Fund Committee will meet in person between February 19th and 21st, 2018 to make their final decisions on project funding for 2018. The review will be informed by the alignment of project proposals with Northern Fund Priorities, relevance of project proposals to Pacific Salmon Treaty Chapter 1, 2, 3 and 5 (northern stocks) provisions, the results of the Northern Fund technical advisor review and additional information available to the Committee (including Commissioner recommendations, if provided) to inform project funding selection.

The Southern Fund Committee will meet in-person between February 19th and 21st, 2018 to make their final decisions on project funding for 2018.

As in prior years, prior to rendering final decisions on project funding the Northern and Southern Fund Committees intend to meet in a joint-session during respective February 2018 meetings. The purpose of the joint-session is to inform the selection (and potentially shared funding) of VHPC project proposals.

Final decisions on Northern and Southern Fund project selections for 2018 will be communicated to individual project proponents by the PSC Secretariat Fund staff in early March. Project proponents of submissions not selected for funding in 2018 will be notified by the end of March.



TO: Pacific Salmon Commission

FROM: Chinook Technical Committee

DATE: February 16, 2017

SUBJECT: Review of PSC expert panel report on forecasting

On October 21, 2016 the CTC received a memo from PSC Commissioners requesting a response and review to an expert panel report “Review of Methods for Forecasting Chinook Salmon Abundance in the Pacific Salmon Treaty Areas”. Specifically commissioners requested that the CTC “provide a summary of its views on the feasibility of implementing the key recommendations specific to the three elements we charged the panel with reviewing”.

The CTC has chosen to respond to this request by providing comments for each of the issues identified by the expert panel. The expert panel organized issues into three categories: general issues and conclusions, regional agency forecasts and PSC Chinook model forecasts. These issues are organized accordingly in the tables below with corresponding CTC comments provided alongside those issues. For the latter two categories of issues, the expert panel also provided a priority code (near-term, intermediate and long-term) to each issue. Those priority codes are included herein. Additionally, the CTC included a feasibility ranking wherein the recommendations were rated on a scale of 1 to 5 where a 1 is highly feasible and 5 is not feasible without significant reprioritization of core CTC functions and the addition of resources. Many of the expert panel recommendations are directed at forecasts supplied by the agencies; the CTC did not provide a feasibility assessment for such recommendations.

The expert panel identified a number of different issues and improvements for forecasts. The CTC found that there were a number of different issues that could easily be remedied and others that were generally cost-time prohibitive. To this extent, the CTC would like to emphasize that while many of the expert panel’s suggestions were technically sound, they were also unrealistic given agency budgets and staff availability. The ForecastR package is capable of implementing many of the highly technical suggestions identified by the expert panel, and many agencies plan to use this tool upon its completion. However, this tool alone currently is not capable of implementing all of the panel’s suggestions.

The CTC would also like to emphasize that many of the CTC members do not conduct the forecasts that are supplied to the PSC Chinook model. In these cases, the CTC can only provide recommendations to the agency forecasters, but cannot necessarily force that they follow a recommendation. In order for the CTC to track agency forecasts, and whether or not these forecasts follow recommendations from the expert panel, we propose to develop a template that agencies could fill out when their forecasts are complete. This template will provide a platform to communicate CTC data needs and ask for information and clarification on the technical aspects of forecasts. This will promote an understanding of the methods and assumptions used in the generation of each agency forecast.

The expert panel also provided extensive comments on the PSC Chinook Model. In the CTC's response to these comments, identification of model improvement funds to carry out such tasks was a common theme in our response. Another consideration is the priority level identified by the expert panel and the time it would take the CTC to implement these recommendations. With treaty negotiations currently underway, and a new imminent agreement, it is unlikely that most of the issues and recommendations related to the PSC Chinook model could feasibly be implemented and tested prior to a new agreement.

Finally, the CTC would like to note that many of the methods identified by the expert panel will be constrained by the quality and availability of the data to inform the models. More sophisticated models are not always a remedy for inadequate data and have a tendency to shift the focus from the inadequacy of the data to the complexity of the model. The CTC generally agrees that the first priority is to improve the quality of the forecast data being collected, and then to apply progressively more complex models when the data can support that level of complexity.

6. GENERAL ISSUES AND CONCLUSIONS from the Expert Panel report and CTC comments

	Page	Issue	Expert Panel Conclusion	CTC Comments
6.1 Documentation of Agency Forecasting Methods and Results				
1.	43	Current documentation of agency forecasts of abundance that are sent annually to the CTC does not provide sufficient information for PSC modelers to identify the long-term accuracy and precision of those forecasts, let alone uncertainty about the current year's forecast.	More comprehensive documentation is needed by the CTC from regional agency forecasters regarding the agencies' methods, critical assumptions and uncertainties, and accuracy and precision of past stock-specific forecasts. Agencies should also state the uncertainty in each stocks' annual forecasted abundance. More frequent in-depth communication between PSC modelers and agency staff is also required.	The CTC recognizes that documentation is desirable, but also recognizes that this may represent an onerous task for the agencies especially given the time constraints for when forecasts are needed. The CTC proposes to develop a simple, clear template that includes a request for specific information that would be helpful to the CTC to inform annual calibration.
6.2 Requirements for Stock Forecasts as Inputs to the PSC Chinook Model				
2.	44	Efforts by agencies to provide forecasts as inputs to the PSC model are hampered by an incomplete understanding of (1) the PSC model's information requirements, (2) how those forecasts are used in that model, and (3) how those uses differ from those of fishery managers within regions.	More explicit direction from the Chinook Technical Committee is needed by agency-based stock forecasters regarding the annually requested forecasts.	See response to #1. The CTC AWG could include language from the proposed template describing the CTC's model requirements, explanation of how forecasts will be used, etc.
6.3 Limitations of Existing Stock Assessment Data				
3.	45	Accuracy and precision of stock forecasts are limited by the available stock assessment data; this is more of a problem for some Chinook stocks than others.	Substantial improvements in basic assessments of some Chinook stocks are needed to support current PSC model and management applications, otherwise expectations need to be rescaled/reduced to recognize existing data limitations. Further expansion of the PSC model's number of stocks and fishing areas may need to be postponed until the quality of relevant data is deemed suitable.	Agreed. Continue to include in LOA RFP and specify needed data as high priority for N and S Funds, and for directed resources to be sought under the next annex. Additionally, there are stocks and stock aggregates that do not have forecasts. It may be a worthwhile endeavor to identify such stocks and pursue development of forecasts.

6.4 Definitions and Best Practices for Agency Stock Assessment and Forecasting				
4.	46	There are substantial differences among regional agencies in how stock forecasts are produced and described.	Establishment of a set of "best forecasting practices" and standard definitions can improve the statistical foundation of methods for stock forecasting	Complete ForecastR and have workshops to facilitate usage of it.
6.5 Statistical Rigor of Agency Forecasting Methods				
5.	51	Forecasting methods for some stocks have not fully incorporated knowledge of changing parameters or recent advancements in statistical methods of analysis.	Accuracy, precision, and transparency of stock forecasting methods might be substantially improved by application of more formal model-selection criteria that match clearly defined management objectives. Forecasts might also improve by use of more advanced statistical methods that allow for time-varying parameters.	Roll out ForecastR to make it easier to investigate and evaluate multiple forecasting approaches. Processes that do not use ForecastR, but use rigorous methods and are well-documented are also supported. The CTC notes that the application of more advanced statistical methods is dependent on the quality and availability of data.
6.6 Limitations of Existing Agency Models for Forecasting				
6.	52	Existing forecasting models used by agencies, especially sibling relationships, are reasonably effective in representing average conditions but are vulnerable to performing poorly for years of very low or very high returns.	Development of new models and advanced parameter estimation methods may improve the accuracy and precision of agencies' annual forecasts. Regardless of any such improvements, large uncertainties in forecasts should be expected, especially when they are based on data outside the range of past observations.	Agreed. This is a limitation of forecasting.
6.7 Documentation of the PSC Model's Forecasting Methods				
7.	54	Incomplete and out-of-date documentation of the current PSC Chinook model and its calibration and projection procedures (1) threatens loss of institutional knowledge as key staff move on, (2) increases challenges to new CTC members who want to understand the model and its procedures, and in the worst case, (3) increases the chance of	Comprehensive up-to-date documentation of the PSC Chinook model in a single, central location is necessary to support its effective and credible use and improvement. A succession plan for training new model users is also critical.	Agreed, better documentation of the PSC Chinook model is needed. However, this will require resource allocation. Systematic review and update of model documentation, including expansion of help menus, is needed.

		errors in the model's application and interpretation.		
6.8 Statements of Uncertainty about the PSC Model's Output Forecasts				
8.	55	The deterministic nature of the PSC model and paucity of routine sensitivity analyses do not provide information about uncertainties in the model's forecasts of abundance in the three AABMs and terminal areas, thereby hampering well-informed decision making by PSC Commissioners and fishery managers in AABM areas.	Point estimates of forecasts of abundance indices in the three AABM areas from the PSC model should be accompanied by descriptions of uncertainties in those forecasts. Uncertainties can be derived from extensive sensitivity analyses of effects of different assumptions and input parameters. Expression of uncertainty in these forecasts is essential for determining the confidence to be placed in them and allowing for appropriate consideration by fishery managers.	This process will be dependent on receiving additional forecasts from agencies or in development of procedures for evaluating effects of uncertainty reported for agency forecasts. Differences in AIs could be evaluated, especially in a retrospective analysis, but forecast or PSC Chinook model calibration selection method should be determined prior to calibration. Evaluating multiple outcomes is particularly difficult in the compressed time available for calibration. The CTC would need to develop procedures for deciding among calibrations based on different forecast inputs. Procedures for considering how to deal with the influence of particularly uncertain forecasts in the calibration results would also be needed.
6.9 Limitations of the Existing PSC Chinook Model				
9.	57	The PSC model's structure, parameterization, and calibration are complex and subject to substantial structural and parameter uncertainties.	Substantial revision, testing, or possibly even replacement of the existing PSC Chinook model is necessary to effectively serve continuing needs, including the need for statements of uncertainty in the model's forecasts. A subgroup of CTC members should be created to explore such revisions and new models.	Agreed. The CTC already has Model Improvement (MI) Group, but it needs continued MI funding to proceed. The availability of a functional DGM will facilitate the exploration of alternative models or management regimes.
6.10 Consistency of Management Structures/Policies with the Limitations of Information and Assessments				
10.	58	Limitations of data and uncertainties associated with stock assessments and	Alternative frameworks, as well as ways of using forecasts of abundance, should be	Investigation of alternative frameworks would require commitment of resources.

		forecasting models challenge effective implementation of abundance-based management of Chinook under the Pacific Salmon Treaty.	considered for Chinook if current information and resources are not sufficient to effectively conduct adequate analyses and implement provisions of the current Treaty. Those provisions may need to be changed during current negotiations.	Likely there will not be enough time to explore alternative frameworks prior to the new annex. Prior to implementation, an alternative model would need to be fully-functioning, tested, and reviewed. If the Commission requests this work, the CTC will need DGM and MI funding.
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7. REGIONAL AGENCY FORECASTS OF CHINOOK ABUNDANCE

The CTC recognizes that many of the Forecast Review Panel comments are applicable to work conducted by the agencies and there is no authority to commit the agencies to undertake these tasks.

Priority Code as assigned by the expert panel

- N = Near-term. Relatively straightforward to implement with likely immediate benefit (within 1 year).
- I = Intermediate. Would require moderate investment of time and effort (1-2 years)
- L = Long-term. Would likely require substantial time and effort, but with high potential for long term improvements (3-5 years).

Feasibility Code as assigned by the CTC

Rated 1 to 5 where a 1 is highly feasible and 5 is not feasible without significant reprioritization of core CTC functions and additional resources. The CTC did not provide a feasibility assessment for Forecast Review Panel comments directed at the agencies (denoted as 'agency').

	Priority	Page	Recommendation	CTC Comments	Feasibility
7.1 General Comments about Agency Forecasts					
1.	N	59	When regional agency forecasters send their stock-specific annual forecasts to the CTC, they should document their model-ranking procedures as well as the past performance of their methods (bias and precision).	The CTC is developing a template to collect desired information on forecasts and will provide this to agencies. Methodology/tools for assessing bias and precision could also be developed and provided. The CTC recommends this work be completed in time for the 2018 model calibration.	1
2.	I	60	Agency forecasters should not choose just one best model for forecasting abundance in each age class. Instead, they should conduct analyses across different models that make different assumptions and report the resulting set of forecasts to the CTC for use as inputs to the PSC model. The generally large prediction intervals (not confidence intervals) around point forecasts should also be reported.	Not a near term assignment/priority. Part of future analysis of model uncertainty. Most agencies already conduct analyses across different models, but only report the outcome from a single model for clarity and to avoid confusion. Can incorporate definition and methodology for desired prediction intervals in template in Recommendation 1. The reporting of prediction intervals can be informative but are only useful if decision-making procedures are developed to make use of this additional information. Currently, these do not exist within the Chapter 3 framework. A process to determine whether an agency forecast should be included or excluded in an annual calibration relative to the forecast that would be produced in its absence by the Chinook Model does not exist.	Agency
3.	I	61	Agency forecasters should also send to the CTC a set of forecasts, each one based on a different model-ranking criterion, as determined by	Intermediate term. Part of future analysis of uncertainty. This task would require agencies to provide multiple forecasts and documentation methods, or a forecast with measure of uncertainty.	4

			stated management objectives. As described in section 8.2, the CTC can then conduct sensitivity analyses with the PSC model to determine their effect on forecasts of abundance in the AABMs.	The CTC could define desirable attributes of forecasts (minimization of bias, maximization of precision, etc.) that could then be included in the template to agencies. This would reduce the volume of information received by the CTC from agencies. CTC could develop methods to evaluate impact of forecast uncertainty on AI estimation. A decision-making framework would also be required to determine the final annual calibration. This work would need to take place during the timeframe when the CTC-AWG is working on the model calibration and resources are already fully committed.	
4.	N	61	We encourage all agency forecasters to try applying ForecastR to their regions' stocks. As well, the CTC should run workshops to familiarize agency scientists with the ForecastR program.	The ForecastR tool is in development. CTC supports use of ForecastR pending completion and review. The CTC will need <u>funding</u> for workshops to make this tool available to the agencies and for further development.	1
5.	N	61	Agency forecasters should try applying a hybrid sibling model, especially to cases in which the fit of data to a standard sibling model is weak.	Need to specify methodology and develop tools. Not required for all stocks, but the CTC can make formal request to agencies to do this work. There are some capabilities that could be incorporated in ForecastR, which would facilitate the model selection process. Resources would be required to implement this function.	Agency
6.	N	62	We recommend that agency forecasters try using a Kalman filter estimation procedure for fitting their sibling relationships to account for time-varying parameters.	Intermediate. Need to specify methodology and develop tools. Not required for all stocks but can make request of agencies. Roll out ForecastR to make it easier to investigate and evaluate multiple forecasting approaches. Could incorporate time series filter capabilities in further development of ForecastR.	Agency
7.	L	63	Continue to improve upon the ability to estimate the contribution by stock to all AABM and ISBM fisheries with the objective of obtaining reliable stock contribution estimates by age. The Panel encourages the commitment of extra funding for the implementation of techniques to estimate stock contributions in a timely enough manner that the results can be used for forecasting in the subsequent year.	Dependent on high quality fishery sampling and age composition data by stock. Need continued funding for high quality assessment and indicator programs. Improving and maintaining current programs needs to be a long term commitment.	1
	7.2	Columbia River			

8.	N	64	The Columbia River Technical Advisory Committee (TAC) should explore whether using formal statistical model-selection criteria improves the accuracy and precision of their forecasts.	This request could be made to TAC and implementation of formal statistical model-selection criteria could be evaluated in the general template provided to agencies.	Agency
9.	N	64	Explore the use of natural-log transformations for sibling regressions. The examination should evaluate both the effect on meeting the regression assumptions and forecasting performance.	Incorporate exploration of transformations for sibling regressions as a desirable element for the template in recommendation 1.	Agency
10.	N	73	The Columbia River Technical Advisory Committee and the Pacific Salmon Commission's modeling group should communicate with each other to ensure that they are both working with the same definition of the Columbia River Summer stock and the same sets of data, and that any historical information reflects this change.	Need near term validation that TAC forecast is consistent with new base period calibration data. Need to explore treatment of subyearlings vs. yearlings in forecasts and validity of single mixed indicator stock in CTC model.	Agency
	7.3	<i>West Coast Vancouver Island</i>			
11.	N	78	The CTC modeling group and WCVI forecasters should decide (1) which type of forecast is required from WCVI (based on base-period data or recent years, for example), and (2) the forecast performance values (bias and precision) beyond which an extensive review of forecasting methods should be triggered.	Documentation that describes the Model's forecasting procedures and settings used in the calibration needs to clearly delineate how forecasts are used in stage 1 and stage 2 calibration process, i.e., in "base period units" or not, due to variable terminal harvest impacts.	1
12.	I	78	An evaluation of the WCVI sampling program should be undertaken to determine if (1) there has been a dramatic change in sample collection methods and sampling intensity over the years, and (2) whether the sample design and intensity is adequate to obtain meaningful age composition estimates. If the sample design appears to be adequate, then explore other ways to estimate the age-3 and age-6 components of the returns.	This objective and the expected result of pursuing this recommendation is not clear. Despite lack of understanding, the following comments are offered: The WCVI Model stock aggregate includes many stocks and ideally requires numerical and age composition estimates for all the escapements and terminal fisheries. It is not clear how effort spent in investigating effects of sample data quality and quantity through time will result in near term improvements to the forecast. Rather, improvements in forecast accuracy and bias are anticipated from increased sampling intensity achieved through a currently funded NEF	Agency

				project, 'WCVI Chinook Terminal Abundance'. The objective is to collect additional samples in the WCVI terminal area (R12).	
13.	I	80	The use of recent harvest rates and maturation rates should be explored for the WCVI forecasting model. These analyses should estimate model sensitivity to uncertainties in these rates, and all results of these sensitivity analyses, including the associated forecasts, should be provided to CTC modelers along with estimates of uncertainty in the forecasts.	The use of recent harvest rates has already been incorporated into the WCVI forecast procedure starting with the forecast provided in 2014. In the near term, recommendations to use recent maturation rates and data transformations can be explored. Sensitivity analyses to estimate the forecast procedure's sensitivity to the recommended changes is a longer term activity.	Agency
14.	I	82	Explore a different and simpler method of forecasting terminal return to WCVI. The preferred method would reduce the complexity of the forecast by reducing the number of data manipulations and number of parameters and assumptions in the forecasting procedure. As with all new methods, it should be thoroughly evaluated to determine whether an increase in performance is actually obtained in terms of bias and precision, and sensitivity analyses should be performed to determine the influence of uncertainties in model parameters.	The current forecast method for the WCVI stock produces pre-fishing ocean abundances by age to which estimated pre-terminal exploitation rates must be applied to arrive at the expected terminal run size by age. This differs from forecasting methods employed in the Southern US which consist of sibling forecast or similar models which do not explicitly take into account ocean abundances or pre-terminal exploitation rates. Alternative forecast methods for WCVI, including simpler ones like those used in the Southern US, can be explored. ForecastR is a tool that can be used to accomplish this. The yearly stage 2 calibration of the Chinook model uses recent FP times RT averages to estimate the fishery exploitation rates for the projection years. The projected fishery exploitation rates when combined with the stock forecasts from the agencies refine the projected EV scalars from stage 1 which then determine the projected abundances by stock.	Agency
7.4 North Oregon Coast					
15.	N	83	We recommend that ODFW forecasters examine In e - In e sibling regressions, a hybrid sibling model, and a Kalman filter estimation procedure, the latter to account for possible temporal changes in parameters of the sibling relationship.	Many of the mentioned recommendations will be options within the analysis capable with updated versions of ForecastR. ODFW anticipates the utilization of these tools in the near future.	Agency
16.	N	83	A list of the alternative forecasting models examined and the criteria used to select among those models for producing a forecast for the Northern Oregon Coast should be clearly stated in the forecast document provided to the PSC	This will be accomplished using the reporting capabilities of ForecastR, given the utilization of this tool. If alternative models are employed, a rationale behind the selection of these models will be provided along with the results of this model.	Agency

			model group, as suggested in recommendations at the start of section 7.		
17.	N	85	All assumptions underlying the annual forecast, as well as data related to those assumptions, should be listed in the document provided to the PSC modelers so that everyone is aware of the forecast's strengths and weaknesses.	Agency response given within the proposed forecast template should easily address this recommendation.	Agency
18.	N	85	Continue the increased sampling in the Northern Oregon Coast for age, rapid reading of scales for age, and improvements in escapement estimation.	Given appropriate resources and agency prioritization, the maintenance of these critical data sources will be secured. Without additional resources, which are currently competed for annually, the quality, availability and timeliness of this sampling and the subsequent data will be degraded.	Agency
19.	I	85	As the population assessment models continue to evolve, NOC researchers should determine the sensitivity of the resulting forecasts to the uncertainty in estimated parameters in the models and quantify the uncertainty in the forecasts.	Evolving spawner assessments will necessitate evolving forecast assessments. The sensitivity of both estimations will be further informed for a greater understanding of the uncertainty inherent in these estimates.	Agency
20.	I	86	If more detailed data can be obtained from terminal fisheries for NOC, the forecast for this aggregate stock should change to a terminal run forecast instead of an escapement forecast.	Within the current time constraints of the need for forecasts, it is not likely ODFW will be able to comply with this suggestion. If future developments allow for expeditious estimation of terminal fisheries impact, this constraint would be removed.	Agency
21.	N	86	The Panelists encourage the continued use of ForecastR for Northern Oregon Coast Chinook Salmon.	OK.	Agency

8 PACIFIC SALMON COMMISSION'S CHINOOK MODEL FORECASTS

	Priority	Page	Recommendation	CTC Comments	Feasibility
	8.2		<i>Unclear management objectives and the PSC Chinook model</i>		
22.	N	92	The CTC should request each regional agency to provide to PSC modelers the forecasts of abundance for the model deemed best for each of the "relevant" ranking criteria (such as MRE, MAE, or RMSE), where "relevant" is defined as those that fit with stated management objectives for the AABMs.	See recommendation #1 in section 7.1 above. The CTC recognizes that agencies may choose other criteria, but the CTC would like documentation on which criteria were used to choose the forecast provided.	1
23.	I	93	A series of projection runs should be conducted with the PSC model to produce a range of AIs for each AABM area. These AIs would reflect the different agencies' stock-specific model-ranking criteria that are deemed relevant to AABM management objectives.	Dependent on receiving additional forecasts from agencies that met other ranking criteria. Differences in AIs could be evaluated, especially in a retrospective analysis, but forecast or AI selection method should be determined prior to calibration. Evaluating multiple outcomes is particularly difficult in the compressed time available for calibration. Clear procedures would need to be developed to determine the final AI among a range of possible AIs for each AABM fishery. This is a time intensive endeavor.	4
	8.3		<i>Structural uncertainty in the PSC Chinook model</i>		
24.	I	93	Functionality of the PSC Chinook model might be enhanced by including, where appropriate, nonlinear relationships such as those found in many other fisheries models, including the effect of fishing on reducing the fish abundance available to subsequent fisheries during a given year.	Long term consideration contingent upon model improvement funds required to commence work on alternative model structure or frameworks. Incorporating nonlinear relationships would require restructuring the model, and would likely require additional data on effort. This is also dependent on the DGM being completed.	5
25.	I	94	Effects of changes in marine spatial distribution of Chinook stocks on functionality of the PSC Chinook model need to be evaluated.	Long term consideration contingent upon model improvement funds required to commence work on alternative model structure or frameworks. The PSC could convene a workshop or special investigation to examine evidence for distributional changes related to environmental conditions.	4
26.	I	95	Sensitivity analyses with the PSC model should be used to explore different assumptions about (1) age structure for stocks without historical	Sensitivity analyses as suggested in (1) and (2) could be carried out but would require dedication of CTC time and resources. This work	5

			age composition data, (2) body-size structure used in the current method for estimating PN _V , and (3) alternative structural formulations of the PSC model to calculate changes in age at maturity as a function of changes in body-size distributions. Some of those analyses could also assume various correlations with age-at-maturity schedules of other stocks.	could be conducted outside of the CTC but would require funding for a contractor. Alternative model structures or frameworks are a longer term consideration. This could be part of analysis with DGM and sensitivity analyses. Implementation in the Chinook Model would require time and effort.	
27.	L	95	The differences between pre-season and post-season abundance indices in each of the three AABMs might be reduced by including in the PSC model tendencies for multiple stocks to have positively correlated time series in productivities.	The CTC could be tasked to discuss how the current Model structure could be modified to incorporate common survival patterns among stocks. Long term consideration contingent upon model improvement funds required to commence work on alternative model structure or frameworks. Evaluate the properties with simulated data using DGM.	4
28.	L	96	The PSC model might be improved if factors such as EV and RT were calculated as functions of other variables.	The CTC could be tasked to discuss whether alternative approaches may be used to calculate or modify the EVs and RTs. This would involve structural changes to the current Model framework. Long term consideration contingent upon model improvement funds required to commence work on alternative model structure or frameworks. Possibility to evaluate the properties with simulated data using a modified DGM.	5
29.	L	96	Uncertainty in estimates from the PSC Chinook model should be explicitly represented either by making the model stochastic or running it across numerous sets of assumptions using sensitivity analyses.	This would require long term consideration contingent upon model improvement funds required to commence work on alternative model structure or frameworks. Making the Chinook model stochastic would require significant revisions, whereas running it across numerous sets of assumptions is more feasible with the current model. Numerous sets of assumptions would require numerous model calibrations, and the expenditure of additional resources to follow-through with this recommendation. Management frameworks, as currently configured, would need to be adjusted to handle uncertainty.	5
30.	L	97	Ideally, the existing PSC Chinook model and/or its procedures should either be tested and refined or an entirely new model (or models) should be developed.	Long term consideration contingent upon model improvement funds required to commence work on alternative model structure or frameworks. Evaluate the properties with simulated data using DGM.	5
			8.4 <i>Uncertainty in parameters of the PSC Chinook model</i>		

31.	I	100	Testing of the PSC model (and all other contemplated models) should be a high priority when the Data Generating Model is released.	Agreed. This would require prioritization that the CTC focus on this recommendation as substantial time and effort would be needed, similar to what was required in the 'harvest rate index investigation' of 2007-09. Additional MI funding would assist this task.	3
32.	N	101	Evaluations of the PSC model should include: (1) a check whether there is confounding of parameter estimates in the stage 1 calibration; (2) a series of sensitivity analyses/calibrations exploring alternative values for assumed age-specific natural mortality rates that might affect all other subsequent calculations and forecasts of abundance, and (3) consideration of whether the PSC model is being over-fit.	Requires substantial MI funding, time and effort; thus this is unlikely in the near term. Maturation rates and survivals are known to be confounded. To some extent this has already been investigated (i.e., Crandall et al (2003) and TCCHINOOK (16)-01). Sensitivity analysis requires a systematic approach.	4
33.	I	101	Documentation should be provided on the basis of estimates of Ricker stock-recruitment parameters, as well as uncertainty in those estimates. Also, some improvement in performance of the PSC model might be obtained if the AWG used a Kalman filter that allows for a time-varying maximum productivity parameter in a given stock's Ricker stock-recruitment model. That Kalman filter procedure will explicitly take into account observation error as well as natural variation.	At this point in time, this will have little effect on the overall calibration. This task would take a considerable amount and time to recode the model. The cost/benefit is not high under the current configuration of the model.	5
34.	I	102	Given the large number of input parameters, all possible combinations of low, medium, and high values for each parameter may be impossibly time consuming. However, only a subset of those combinations would be needed to produce a range of forecast abundances.	The AWG could review the sensitivity analysis completed in 2001 as a starting point to identify which parameters the model is most sensitive to. This could shed light on where to prioritize investments. A range of forecast abundances will only lead to further contention unless there is an objective and predetermined selection procedure for what will be agreed to.	4
35.	I	102	Additional evaluation and documentation are needed of the PSC model's methods for dealing with stocks for which age-composition data and/or forecasts of terminal abundance or escapement are not available, given the large relative abundance of those stocks in some AABM areas.	The CTC is currently engaged in the documentation of the new base period calibration.	2

36.		103	The Panel generally recommends use of stock-specific forecasts provided by agencies rather than forecasts derived solely from the PSC model in the absence of clear evidence of improvements in accuracy and precision across multiple years.	The CTC typically uses agency forecasts when provided.	1
8.5 Outcome uncertainty in the PSC Chinook model					
37.	L	105	Considerations of outcome uncertainty (deviations between desired and realized outcomes such as catches), as well as uncertainties in forecasts, will influence expectations of managers of these AABM fisheries when they choose annual fishing regulations.	We are cognizant of this. No specific action required.	Agency
38.	L	105	The PSC Chinook model should take into account outcome uncertainty when making forecasts and presenting uncertainties in them.	This would require adjustments to the model structure. A range of forecast abundances will only lead to further contention unless there is an objective and predetermined selection procedure for what will be agreed to.	5
8.6 Other issues related to the PSC Chinook model's forecasts					
39.	I	105	The calibration procedure for the PSC model should be standardized and thoroughly documented to such an extent that a new member of the Analytical Working Group could repeat previous example analyses and come to the same stopping point about which calibration is deemed "final".	Additional resources are needed to facilitate further documentation. The CTC recognizes the need for better documentation of the inputs and decisions made during the calibration process. Some work on improved documentation has already been completed or is in progress. The prioritization of this task should reflect the imminent retirement of some key AWG members.	1
40.	L	106	The abundance forecasts for AABMs areas produced by the PSC Chinook model should convey to managers the net effect of all of the major uncertainties described previously -- structural uncertainty, parametric uncertainty, uncertainty about management objectives, and outcome uncertainty.	On-going discussion within the CTC as to how to respond to and incorporate the recommendations of the Forecast Review Panel. The CTC agrees that this task is something to work towards, but also recognizes that within the current management framework of Chapter 3, how to incorporate uncertainty in AIs would be a policy decision.	Not Applicable

PACIFIC SALMON COMMISSION WORK PLAN
2017-2018

Panel / Committee:

Northern Panel (reporting to the Pacific Salmon Commission)

Northern Boundary Technical Committee (reporting to the Northern Panel)

Date:

For review at the Executive Session of the Commissioners on October 23 - 27, 2017 (in Suquamish, WA)

Update on Bi-lateral Tasks Assigned Under Current PSC Agreement:

Northern Panel:

1. Finalize bi-laterally agreed upon language for Chapter 2 or associated language, with respect to a final agreement for the next treaty period.
2. Review Northern Boundary Area fisheries for 2017 and discuss compliance with provisions of the 2009 PST Agreement.
3. Review and approve the Northern Boundary Technical Committee's update of the 2016 allowable and actual harvests of sockeye salmon, and 2017 allowable and actual harvests of pink salmon, as specified in Annex IV, Chapter 2. Depending upon the availability of a report from the NBTC, may also review preliminary 2017 allowable and actual harvests of sockeye salmon.

Northern Boundary Technical Committee:

Complete the 2016 Boundary Area sockeye salmon and 2017 pink salmon run reconstructions, update the cumulative Annual Allowable Harvest sharing agreements, and submit to the Northern Panel for approval. Depending upon availability of data, may also present a preliminary 2017 Boundary Area sockeye salmon run reconstruction.

Commence a review and discussions regarding coho abundance, data, and factors that may affect coho management issues pertaining to the PST. This review includes NBC, SEAK and Transboundary rivers in the SEAK area.

Obstacles to Completing above Bi-lateral Tasks:

Negotiations on the associated language with chapter 2 are ongoing with no agreements as at time of writing this report.

Outline of Other Panel / Committee Tasks or Emerging Issues:

Northern Panel:

1. Review the status of the Northern Fund, receive updates on funded projects, and provide input as appropriate for project funding processes underway for 2017–2018.

Northern Boundary Technical Committee:

None.

Potential Issues for Commissioners, including enhancement activities reported under Article V:

If U.S. and Canadian panel members are unable to agree on Chapter 2 or associated language, negotiations will move to the commissioner level for resolution.

Potential Issues for Committee on Scientific Cooperation

None.

Proposed Meeting Dates and Draft Agendas:

Northern Panel:

The U.S. NP and U.S. NBTC members, as appropriate, will meet in December, 2017, in Juneau, for negotiation purposes associated with revision of Chapter Two of the Agreement. The Canadian NP members and Canadian NBTC members, as appropriate, will meet in December 2017 in Prince Rupert in preparation for negotiation associated with the revisions of Chapter Two and Five of the Agreement.

The Northern Panel will meet in conjunction with the Commission Post Season Meeting in January 2018 and, as determined appropriate by the Panel in January, the Commission Annual meeting in February 2018. If necessary, the panel will conclude negotiation of language with respect to Chapter 2 and relevant sections of Chapters 5 and 7.

Northern Boundary Technical Committee:

Complete the 2016 Boundary Area sockeye salmon and 2017 pink salmon run reconstructions, update the cumulative Annual Allowable Harvest sharing agreements, and submit to the Northern Panel for approval. Depending upon availability of data, may also present a preliminary 2017 Boundary Area sockeye salmon run reconstruction. Review existing coho data in NBC, SEAK and southern Transboundary rivers

Status of Technical or Annual Reports:

A draft of the NBTC Annual Report for 2017 fisheries is expected to be available for the January, 2018 meeting.

Comments:

None.

PACIFIC SALMON COMMISSION WORK PLAN
2017-2018

Panel / Committee:

Transboundary Rivers Panel (reporting to the Pacific Salmon Commission)

Transboundary Technical Committee (reporting to the Transboundary Rivers Panel)

Date: *For review at the Executive Session of the Commissioners on October 23-27, 2017 (in Suquamish WA)*

Update on Bi-lateral Tasks Assigned Under Current PSC Agreement:

1) Development of Abundance Based Management Fishery Regimes.

The Transboundary River Chapter (Chapter 1) of Annex IV was revised and agreed upon in 2008. Abundance based management (ABM) fishery regimes are currently in place for: Taku River Chinook, sockeye, and coho salmon; and Stikine River Chinook and sockeye salmon. Harvest sharing agreements are in place for the Stikine and Taku rivers and the respective U.S. and Canadian fisheries are regulated with the objective of achieving agreed escapement and harvest sharing goals. The Agreement calls for implementation of abundance based regimes for Stikine River coho and for Alsek River Chinook and sockeye salmon.

2) Continue the existing joint enhancement programs designed to produce annually 100,000 returning sockeye salmon to each of the Taku and Stikine rivers.

On the Stikine River, enhanced production has contributed significantly to existing fisheries harvesting Stikine sockeye salmon (combined annual catch of about 45,000/year), although annual production has fallen short of the 100,000 production target in most years. Taku River enhancement has under-performed and has not contributed significantly to the Parties fisheries with total combined annual catches of enhanced sockeye salmon over the past 10 years averaging 6,500 fish per year. Assessment programs to better understand why Taku enhancement performance has been poor are anticipated to continue. With support from the Northern Endowment Fund, new / additional enhancement options on the Taku River (Trapper Lake and Tatsamenie in-lake fry rearing) are being pursued in an effort to achieve progress towards the bilateral enhancement goal. The Agreement calls for annual development of a Stikine Enhancement Production Plan (SEPP) and a Taku Enhancement Production Plan (TEPP) and these plans continue to be successfully completed each year.

3) Harvest sharing performance.

Revised language concerning Paragraph 4 of the Agreement was agreed upon by the Panel during the February 2009 PSC meeting. Since 2009, the Panel has exchanged papers and successfully worked through the revised procedures concerning catch and escapement performance (overage/underage). In January 2014 the Panel achieved bilateral agreement on

principles and has implemented an annual review for relevant watersheds/fisheries since that time.

Obstacles to Completing above Bi-lateral Tasks:

- 1) *The Parties shall improve procedures for coordinated and cooperative management of the fisheries on transboundary river stocks.*

An ABM regime for Stikine coho salmon has not yet been developed and is anticipated to be several years away due to difficulties in implementation and cost for in-season abundance estimation. Significant improvement in abundance based management of sockeye and Chinook salmon in the Alsek River requires future substantial (and costly) program development. Both Parties face difficulty implementing existing ABM programs in place for Taku and Stikine salmon due to increasing costs and limited resources. In turn, the Parties have resorted to competing for Northern Endowment Funds for the past several years to simply maintain the fishery assessment and management programs that are currently in place. Maintenance of the commitments set out in Chapter 1 will require an increased provision of sustained funding by both Parties into the future.

- 2) *Continue the existing joint enhancement programs designed to produce annually 100,000 returning sockeye salmon to each of the Taku and Stikine rivers.*

Considerable effort has gone into determining reasons behind the low production of certain Taku River enhanced sockeye salmon, and in turn, adjustments have been made to the program to strive to achieve improvement. Despite these efforts, success has been limited in certain programs/areas. In general, the advancement and success of sockeye salmon enhancement projects/programs in the Taku and Stikine rivers has been significantly reliant on the availability of funding via the Northern Endowment Fund. Similar to the fiscal challenges identified in #1 above, a significant increase in funding to continue the implementation of the sockeye salmon enhancement program will be needed to achieve the production goals outlined in Chapter 1. Support for renewed production of enhanced sockeye salmon in the Tuya watershed (Stikine River) will require a sustainable and effective approach to address concerns regarding residual (unharvested) terminal fish. The experience gained through efforts undertaken over the past several years indicate that an effective solution to addressing residual Tuya Lake-origin enhanced sockeye salmon is anticipated to considerably exceed funding available to either Party at the current time. In absence of a viable alternative, the discontinuation of the Tuya Lake component of the sockeye salmon enhancement program will preclude achieving the stated sockeye salmon production goal for the Stikine River.

Outline of Other Panel / Committee Tasks or Emerging Issues:

- Adequate, stable, long-term, funding of assessment and enhancement programs is critical to improving and/or implementing ABM regimes for Taku, Stikine, and Alsek salmon stocks. Substantial incremental project and overall assessment program cost increases have greatly surpassed available fiscal resources and has resulted in numerous, very difficult challenges to

the Parties attempting to achieve the assessment and enhancement program goals. Expectations of the users of these fishery resources and expectations of Panel members are not being met by the Parties under the current fiscal resource levels.

- The variable success of the Taku enhancement program and recent increased complications associated with the Stikine enhancement program (specifically, uncertainty over renewal of the Tuya Lake component) offer significant challenges to the Parties in reaching the enhancement goals as specified in the Annex. Canada is actively pursuing the exploration and development of new and emerging enhancement opportunities to achieve bilateral enhancement program objectives in the future.

Potential Issues for Commissioners, including enhancement activities to be reported under Article V:

A landslide that occurred in the Stikine River (Tahltan River sub-watershed) in spring 2014 has resulted in impedance of adult Chinook and sockeye salmon passage. Emergency efforts to pass adult salmon were undertaken in 2014 while modifications of the barrier to improve and monitor passage from 2015 through 2017 have taken place. Radio-telemetry work on Chinook salmon since the slide event has shown the slide resulted in delayed migration of Chinook salmon at the water levels observed in those years. The Northern Endowment Fund has provided resources to Canada to support the development of a long-term adult salmon passage remediation plan, with implementation of remedial measures anticipated by the spring of 2018.

The loss of bilateral agreement regarding the use of Tuya Lake as a sockeye salmon enhancement site beyond 2014 has created significant challenges towards achieving the 100,000 enhanced sockeye salmon production target identified for the Stikine River. Canada is actively exploring alternative / new initiatives to achieve the enhanced production target in the future.

Potential Issues for Committee on Scientific Cooperation: None.

Proposed Meeting Dates and Draft Agendas^{1 2}:

Transboundary Panel:

1. Pacific Salmon Commission Post-Season Review (January 8 – 12, 2018; Portland, OR.):
 - Review of the U. S. and Canadian fisheries in 2017 in the Taku, Stikine and Alsek Rivers and resultant spawning escapements.
 - Summary of salmon passage in 2017 past the Stikine (Tahltan) River landslide including update on remediation efforts.
 - Review of 2017 Chinook and sockeye salmon radio tagging results.
 - Review of enhanced production returning in 2017.
 - Review of enhanced sockeye salmon fry outplants completed in 2017.
 - Review of egg takes and other enhancement activities that took place in 2017.

¹ The U.S. TBR Panel and U.S. TTC members, as appropriate, will meet in December, 2017, in Juneau.

² The CDN TBR Panel and CDN TTC members will meet in December 2017 in Whitehorse, Yukon.

- Review of preliminary SEPP and TEPP.
 - Planned sockeye salmon fry out-plants in 2018.
 - Review overage/underage strategy implemented in 2014, discuss any overage/underage in 2017, and identify any remedial management responses.
 - Evaluation of Transboundary Rivers enhancement operations.
 - Northern Endowment Fund – update on projects under consideration for funding in the Transboundary Rivers area (2018).
2. Pacific Salmon Commission Annual meeting (February 12 – 16, 2018; Vancouver, B.C.):
- Presentation of bilateral 2018 Stikine, Taku and Alsek River salmon outlooks.
 - Completion of the agenda from previous meeting.
 - Follow-up to questions and issues that arise during post season review.
 - Final Panel review of SEPP and TEPP and development of recommendations to the Parties concerning SEPP and TEPP for 2018.
 - Discussion and planning for the stock assessment review for Taku sockeye salmon as called for in revised Chapter 1 Annex.
 - Discussion of additional management measures being planned by both Parties to address Chinook salmon conservation for the Taku, Stikine, and Alsek river stocks.

Transboundary Technical Committee:

1. Fall meeting: November 14-17, 2017, Vancouver, BC
- Finalize 2017 Preliminary post-season report including:
 - Review Canadian and U.S. Fisheries (catches, management actions, PST compliance): Stikine, Taku, Alsek
 - Stock assessment projects: MR, Chinook and sockeye salmon Radio-telemetry, CPUE, Aerial Surveys, CWT, GSI, Weir Counts, Assessment Fisheries, Wild/Enhanced Components, Creel/Catch Sampling, Spawning Ground Surveys
 - Escapements:
 - Stikine: drainage-wide Chinook salmon and Tahltan River and Mainstem sockeye salmon
 - Taku: drainage-wide Chinook, sockeye, and coho salmon
 - Alsek: drainage-wide and Klukshu River Chinook and sockeye salmon
 - Taku and Stikine 2018 Chinook salmon forecasts
 - Tahltan River landslide and remediation update
 - Alsek River salmon assessment programs.
 - Enhancement Projects
 - Review of 2017 activities
 - 2018 SEPP and TEPP discussion
 - Enhancement planning
 - 2017 Egg-takes
 - 2017 Out-plants (from 2016 egg takes)
 - Review and update of GSI baseline
 - Review Overage/Underage spreadsheet

- Review/Finalize outstanding final catch and escapement reports
 - Discuss Northern Endowment Fund projects in the TBR area
 - Report publication schedule
2. Late Winter Project Planning Management Meeting: February 2018, (Location TBD)
- 2018 Program planning -Stikine, Taku, Alsek rivers
 - Enhancement
 - Run outlooks (Chinook, sockeye, and coho salmon) – Stikine, Taku, Alsek rivers
 - Preliminary management plans 2018
 - Genetic baseline update and sampling plan 2018
 - Enhancement Sub-committee update on hatchery activities, egg take targets, assessment studies, data summary updates and 2018 management plan.
3. Spring Management Meeting: March 2018, Teleconference:
- Transboundary Technical Committee Management Plan 2018
 - U.S. Management Plans and activities
 - Canada Management Plans and activities
 - Joint activities
 - SEPP and TEPP
 - Follow-up and Final Publication

Status of Technical or Annual Reports:

Annual Catch and Escapement Reports

- *Preliminary Estimates of Transboundary River Salmon Production, Harvest and Escapement and a review of Joint Enhancement Activities in 2017 – January 2018.*

Annual Management and SEPP and TEPP Reports

- *Salmon Management for the Stikine, Taku, and Alsek Rivers and SEPP and TEPP in 2018 – April 2018*

Comments: Note regarding Pacific Salmon Treaty renegotiation - Chapter 1 renewal: As per the Commissioner’s instructions, in February 2017 the Transboundary Panel Co-Chairs presented the Commission with bilaterally endorsed changes and the recommendation to renew Chapter 1 beyond the 2018 fishing season.

PACIFIC SALMON COMMISSION WORK PLAN
2017-2018

Panel / Committee: Fraser River Panel and Fraser River Panel Technical Committee

Date: Provided at PSC Executive Session in Suquamish, WA on October 23-27, 2017.

Update on Bi-lateral Tasks Assigned Under Current PSC Agreement:

The Panel continued implemented Chapter 4 of the Pacific Salmon Treaty for the 2017 sockeye and pink salmon season.

Obstacles to Completing above Bi-lateral Tasks:

There were no obstacles to Panel implementation of the Fraser River Sockeye and Pink Salmon chapter (Chapter 4 of the Pacific Salmon Treaty) in 2017.

Outline of Other Panel / Committee Tasks or Emerging Issues:

As directed by the Commission, the Panel has undertaken work in support of the hydro-acoustics review being shepherded by the Fraser Strategic Review Committee (FSRC). During 2015 Dr. Carl Walters provided a report with recommendations for the FSRC to “*examine alternative hydroacoustic monitoring configurations for the Mission Bridge and Qualark Creek stations – both as independent and as complementary operations, as well as other assessment methodologies.*” The Panel created both a Steering Committee of Panel members and a technical working group with the Panels Technical Committee members, PSC staff and staff from the Department of Fisheries and Ocean Canada. A significant number of work items to address Dr. Walters’s recommendations have been completed to date and others are currently in progress. The Panel will continue this work as needed until the strategic review is completed.

The Fraser River Panel is undertaking a review and evaluation of the operations of the test fisheries to identify opportunities for refining the test fishing program such that required information is obtained, while minimizing costs. This review is expected to be complete by the fall of 2017. Outcomes of this review will need to be considered in conjunction with the hydro-acoustics review in providing recommendations for an overall Fraser sockeye and pink salmon assessment approach for the future.

The Fraser River Panel will begin activities associated with chapter renegotiation. Addressing the financial requirements of chapter implementation in time to inform treaty funding requests will be a key consideration. At this time the Fraser Panel does not anticipate the need for additional meetings associated with chapter renegotiations but is planning to schedule additional time (1 day each meeting) during the April and June pre-season planning meetings to address this issue.

Potential Issues for Commissioners:

One issue for the Commissioners following the 2017 fishing season is the cost of Panel-related test fisheries and the use of revolving funds in 2017 to cover the shortfall. Returns of Fraser sockeye and pink were much lower than anticipated; therefore fewer fish were retained in test fisheries than was expected. The two countries did contribute resources to the Test Fishery Revolving Fund (TFRF) for 2017, and those funds will be sufficient to cover program expenses generated in 2017. While a forecast for the 2018 sockeye return year will not be available until January, parent year sockeye escapement in 2014 suggest that the 2018 Fraser sockeye return should be much better than 2017. Thus, if the historical test fishing program on this cycle was conducted, potential net

revenues in 2018 would range from a \$700,000 surplus (if all fish encountered could be retained and sold) to a potential deficit exceeding \$1,000,000 if the full program was implemented and catches were very poor and restricted. There are currently insufficient funds within the TFRF to cover the deficit associated with the worst case scenario described above, and given the prospects for poor returns in 2019-2021 future contributions to the TFRF may be required to address potential deficits in those years. However if returns in 2018 are abundant, consideration should be given to allow for retention of additional fish in 2018, to augment revenues in the TFRF. The Panel's test fishery review did not identify significant cost savings which would reduce the size of the potential deficit (or increase the size of the potential surplus) beyond the actions the Panel has taken in recent years.

Potential Issues for Committee on Scientific Cooperation

The work of the Committee on tracking environmental anomalies will be of great interest to the Fraser River Panel.

Proposed Meeting Dates and Draft Agendas:

October 23-27, 2017 PSC Executive Session

Present the 2017/2018 Fraser Panel/Fraser River Panel Technical Committee Work Plan to the Commission.

Present updates on the hydro-acoustic review being conducted by the Fraser Panel Hydro-acoustic Steering Committee and Working Group to the FSRC.

Present an update on the test fishery review conducted by the Fraser Panel.

Special issues the Panel will address by the conclusion of the Annual meeting cycle include:

1. Review and provide a report to the Commission on the 2017 implementation of Chapter 4 of the Pacific Salmon Treaty.
2. Address management performance and accountability issues, including a review of "2017 Fraser Management Plan Principles and Constraints" and consistency in managing all fisheries to meet bilateral objectives.
3. Continue to review the technical information and modeling work being used as the basis for the Fraser Panel's Management Adjustments, as well as additional in-season information that has been used when applying Management Adjustments in-season. Review the procedure for incorporating these adjustments into in-season management of Fraser sockeye.
4. Compare in-season estimates of sockeye run size by management group with observed spawning escapements, catches and any applied management adjustments, including review of upstream migration timing, en-route mortality and spawning success of late-run stock components. Where differences are observed, evaluate the potential causes of observed differences, including consideration of the potential contribution of fishery induced mortalities to any discrepancies. Compare the observed differences to the projected differences based on the Management Adjustments adopted by the Panel in-season.
5. The Panel will prepare recommendations on 2018 Fraser sockeye-related proposals to the Southern Endowment Fund (SEF) Committee. The Panel developed a list of specific funding priorities, which was used in the SEF call for proposals, so that applications will be focused on work of the most value to the Panel.

6. Review issues concerning the management of Fraser sockeye and pink salmon, including escapement goal determination, documentation of escapement levels, and variations in marine area migration timing and diversion that result in stock and/or species overlap and management complications in Panel fishery harvest areas.
7. The Panel will continue discussions on methods for determining allowable impacts on non-targets stocks and species, and necessary conservation actions, in Panel Area fisheries.
8. The Panel will continue to review and discuss data and management implications relating to the placement of stocks within the Fraser River Sockeye Management Groups, including the changes made to the stock aggregations in 2012. As an outcome of this discussion and review, the Panel will determine whether further revision of stock management group assignments for individual stocks is warranted, and whether the stocks would be more appropriately managed as part of other stock management groups for 2018 or longer term.

January, 2018 PSC Post-Season Meeting

Each National Section shall conduct detailed reviews of the 2017 Fraser River sockeye and pink salmon returns, fishery performance, special conservation actions and escapement levels and provide a summary of this information to the Commission.

February, 2018 PSC Annual Meeting

The Panel shall continue discussions of any unresolved special issues.

The Panel shall address “Other Activities” identified for the Panel in the 2017/2018 Work Plan.

The Panel will initiate the 2018 Pre-Season Planning process consistent with the provisions of the renewed Annex IV, Chapter 4 of the Pacific Salmon Treaty, and any guidance provided by the Commission. The Panel will require meetings in April and June 2018 in addition to the PSC Annual Meetings to complete pre-season planning tasks.

Outline of Other Activities of the Fraser River Panel for the 2017/2018 Cycle

This list includes special items/topics of less time sensitive nature or one-time projects.

Continue development of an improved Fraser sockeye and pink fishery planning model.
The Panel will facilitate, monitor and provide guidance as necessary to the efforts of the PSC Staff and Fraser River Panel Technical Committee to develop the new Fraser Fishery Pre-season Planning Model.

Continue work on Hydro-acoustics: The Panel will continue work on Hydro-acoustics as directed by the Commissioners.

Continue with work to advance the Test Fishing review and to implement test fisheries in the most cost-effective manner possible, while obtaining information required to inform fisheries management decisions.

Evaluate Panel-Approved Test Fisheries and potential use of data from other sources.
This work will build on information compiled during 2017 regarding the purpose and

cost of the eleven (11) current PSC Panel-approved test fisheries. Using resources provided through the SEF, workshops were held in the Fall 2016 and Spring 2017 to develop criteria to evaluate the relative merits of both current as well as alternative test fishery programs. Workshop participants also identified opportunities for more effective use of data from fisheries and other sources to augment information obtained from test fisheries and considered how test fishing activities may be better coordinated with hydro-acoustic assessment to provide the Panel with a combined program that most effectively and efficiently meets the management needs of the Panel. The workshops identified a number of areas for priority research and several proposals were submitted to the SEF to address some of these priorities.

Review 2017 Test Fisheries and Develop a Test Fishing Plan for the 2018 Season. Plan will incorporate any changes and or use of data for other sources that could improve in-season assessments.

Review Progress in Completing the Canadian Sockeye Escapement Initiative: The Panel may receive a presentation on changes and updates to the Fraser River Sockeye Spawning Initiative (FRSSI) following up on a workshop planned for late January 2018

PSC staff will provide a progress report on the sampling programs at Mission, including any issues that arose from modifications made to the program in 2017. The Panel will also receive a report on the 2017 Qualark acoustic program.

PSC staff will provide a presentation on species composition issues at Mission with a special focus on Chinook and Pink issues encountered in 2017.

The Technical Committee will review data updates to the Fraser sockeye catch and exploitation rate files, and make revisions as needed.

The Technical Committee will draft a memo on data sharing and co-ordination so that changes to production data can be tracked from various data sources.

Identify Key Projects Through The Ad Hoc Fraser River Panel Southern Endowment Fund Scoping Group: This group, with the assistance of the PSC technical staff, will identify opportunities for the enhancement, restoration, and improved management of Fraser River sockeye and pink salmon. The Panel will provide advice to the Southern Fund Committee on the merit and value of Fraser sockeye and pink salmon related projects proposed by other groups.

Administrative Issues: Review and approve outstanding Panel minutes and Fraser River Panel Annual Reports.

Review the PSC proposed budget for 2018 Fraser River Panel Programs.

Status of Annual Reports:

In January 2016, the Panel adopted a new process for completing the annual reports that focuses on the recent years first and then completes the backlog. The 2016 annual report has been sent out for review and comments have been received from both countries. It is anticipated that it will be published fall 2017. The 2017 annual report will be sent out for review by March 31, 2018,

and should be published in the fall of 2018. The 2013 and 2014 reports still need to be sent out for review, but it is anticipated this will happen by spring 2018.

Fraser River Panel Meeting Schedule¹

January 8-12, 2018	PSC Post-Season Meeting	Portland
January 30-31, 2018	FRSSI Workshop	Richmond?
February 12-16, 2018	PSC Annual Meeting	Vancouver
March, 2018 – 1 day	Fraser River Panel Technical Committee	TBD
April, 2018 – 2 days	Fraser River Panel Technical Committee	TBD
April, 2018 – 4 days	Fraser River Panel Pre-Season Planning	TBD
May, 2018 – 2 days	Technical Modeling Meeting	Vancouver
June, 2018	Fraser River Panel Technical Committee	TBD
June, 2018 – 4 days	Fraser River Panel Pre-Season Planning	TBD
July 6, 10, 13, 17	Fraser River Panel – In-Season Meeting	Calls
July 20, 24, 27	Fraser River Panel – In-Season Meeting	Calls
July 31, 2018	Fraser River Panel – In-Season Meeting	Richmond
August 3, 10, 17, 24, 31	Fraser River Panel – In-Season Meeting	Calls
August 7, 2018	Fraser River Panel – In-Season Meeting	Richmond
August 14, 2018	Fraser River Panel – In-Season Meeting	Richmond
August 21, 2018	Fraser River Panel – In-Season Meeting	Richmond
August 28, 2018	Fraser River Panel – In-Season Meeting	Richmond
September 4, 7, 11	Fraser River Panel – In-Season Meeting	Calls
September 25-27, 2018	Fraser River Panel – Post-Season Meeting	TBD

1 – This schedule will be reviewed for opportunities to improve upon efficiency and reduce Panel costs.

Draft: Oct 4th 2017

PACIFIC SALMON COMMISSION WORK PLAN
2017-18

Panel / Committee:

- *Southern Panel; reports to the Pacific Salmon Commission.*
 - *Coho Technical Committee (CoTC); reports to the Southern Panel.*
 - *Chum Technical Committee (ChumTC); reports to the Southern Panel.*

This work plan includes a summary of the work plans submitted by both the Coho and Chum technical committees, and as such does not include all of the detail in those work plans. This is not intended to deny the importance of that detail, only to provide a high level summary of it for Commissioners.

Date: *October 23-27, 2017 -- PSC Executive Session, Suquamish, WA.*

Update on Bi-lateral Tasks Assigned Under Current PSC Agreement:

Southern Panel:

- *Annual Post Season Review – A detailed bilateral review of the 2017 coho, chum and chinook salmon abundances, fishery performances, and preliminary estimates of escapement levels will be conducted at the January 2018 PSC post-season meeting.*
- *Present updates on the development of management objectives/breakpoints for Coho management units for the current Southern Coho Management Plan of Chapter 5.*
- *Assess status of renegotiation of Chapter 5 (Coho) and Chapter 6 (Chum). Work on any requests and follow-up assignments from Commissioners, as needed, related to renegotiation of Chapters 5 and 6.*
- *Conduct pre-season data exchanges.*
- *Review and recommend priorities for Southern Endowment Fund Committee consideration.*
- *Update reporting requirements, and assign work as required for completion.*

Coho Technical Committee:

CoTC progress on routine assignments has been reduced due to realignment of priorities to support renegotiation of the Southern Coho Agreement. The following list includes updates on the status of ongoing tasks from previous work plans, as well as descriptions of bilateral tasks planned for 2017-18:

- (1) Support for development of new Southern Coho Agreement included participation at various workshops and working sessions within sections and bilaterally.
- (2) Post Season ER Estimates. In 2017, the CoTC completed the annual report for the 2015 fishing season.
- (3) CoTC initiated work to update a periodic report to cover the years 2010-2015, including alternatives for maintaining a living report in electronic form. Programs were developed to facilitate generation of tabular summaries of data based on outputs produced by Coho FRAM, to enable more efficient production of the periodic report.

Draft: Oct 4th 2017

- (4) In March of 2017, the Parties met in Arlington, WA to accomplish the annual pre-season information exchange for fishery planning. Each country relayed information about their pre-season salmon forecasts, domestic fishery management processes, concerns, and priorities. A similar meeting is expected in March 2018.
- (5) Regional fishery planning model development. Bilateral interaction for the CoTC continued to be centered on model improvements to improve efficiencies in production of estimates of post-season exploitation rates provided to the Southern Panel.
- (6) CoTC gave an informational presentation on ocean conditions at the February 2017 PSC meeting. This presentation focused on a review of ocean indicators, including patterns of environmental variability and expected effects on Pacific Northwest Salmon.
- (7) Documentation and development of reference points for determining status and associated exploitation rate caps for individual management units (MUs). Development of reference points for Canadian MUs is proceeding in coordination with implementation of the Wild Salmon Policy (WSP) (in progress) and CSAP review.
- (8) Develop agreed upon criteria and procedures for determining MU status. A common approach to data collection and parameter estimation, where feasible and appropriate, will facilitate implementation, but has not been developed.
- (9) Complete MU descriptions. An outline of requirements was developed in 2003 and reviewed in 2009. A Coho database has been developed for U.S. stocks. Draft descriptions were prepared for Canadian MUs and will be finalized once reference points are determined. Draft descriptions for most US MUs were completed in 2012, reviewed by local fishery managers, and are currently being finalized.
- (10) Criteria for defining MUs: A draft discussion paper has been prepared and is available as a publication from the PSC. No further work on MU delineation is anticipated for the foreseeable future.
- (11) Assessment Framework. A presentation was made to the Southern Panel at the February 2012 Annual Meeting in Vancouver describing a draft framework to identify the biological and fishery assessments required for implementation of the Treaty provisions for Coho. No subsequent modifications have been made. The framework provides guidelines or criteria to help evaluate the adequacy of available information and the capacity of assessment programs to produce information required to implement the current Southern Coho Agreement and develop a new Southern Coho Agreement, highlights issues relating to CWT data for coho, and presents information needs within a decision-theoretic framework to help inform policy deliberations of relationships between uncertainty, risk, and potential requirements for assessment programs. Criteria discussed include: 1) conservation risk and stock outlook; 2) loss of fishing opportunity; and 3) costs for monitoring and assessment.

Chum Technical Committee:

- *Finalize the 2014 annual report and provide for publication. The committee expects to finalize this report during the PSC meeting in January 2018.*

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- *Continue work on the draft report covering 2015 fisheries and research. This task will be a principal focus during the PSC meeting in January 2018.*
- *The committee's other focus will be continued development of the following aspects of the strategic plan (see figure titled "Southern Chum Strategic Plan" in the Comments section below). These include:*
 - *Further evaluation and testing of the first iteration of the ChumGEM model. Need to document issues, gaps, and possible improvements to ensure future work on the model has appropriate direction. Possible SEF project to continue the development of the run reconstruction module for Southern BC and Washington State Chum.*
 - *Provide updates on any approved 2017 SEF projects: Currently 3 Chum salmon projects are being conducted in 2017:*
 - **Sampling program in the Strait of Juan de Fuca (Year 2)**
 - **Estimate of total Fraser River escapement using GSI information at Albion Test Fishery and enumeration of Chilliwack River escapement (Year 2)**
 - **Mixed stock GSI in Southern BC and Puget Sound (Year 2)**
 - *Work on 2017 reports associated with SEF projects for later submission.*
 - *Review SEF priorities and ensure projects are ready for 2018 implementation should funding materialize.*
 - *Identify additional sampling requirements to complete and/or update the existing baseline collections, seek other funding opportunities or resources to help with the database development, and work on other priority items such as the Escapement Reference Point development (Update on Holt et al. work).*

Obstacles to Completing above Bi-lateral Tasks:

Southern Panel:

- *To accomplish the above bi-lateral tasks, we will need the Commissioners' support to hold the requested number of meetings during 2018 that are noted below in the subsection, "Proposed Meeting Dates and Draft Agendas."*

Coho Technical Committee:

- *A draft replacement for the Southern Coho Agreement is near completion. Once adopted, the Agreement will redirect efforts of the CoTC away from routine reporting and toward improving CoTC efficiencies, stock and fishery assessments, and proactively dealing with uncertainties relating to climate change. Canadian staffing levels for the CoTC are uncertain. The capacity of the CoTC to fulfill assignments and responsibilities under the current Agreement were severely impacted by the limitations of adequate resources directed at coho management and data deficiencies. The CoTC is concerned about (1) the capacity of both Parties to maintain catch sampling and stock monitoring programs, and to provide required inputs into joint management planning models; (2) the need for*

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additional dedicated staff to participate in activities of the CoTC; (3) the need to improve information exchange on preseason FRAM runs for impact projections (preseason model runs from Canada are needed to provide projections of planned fishery impacts on MUs); and (4) the lack of established monitoring and reporting systems to assess impacts of environmental change.

Chum Technical Committee:

- *While support from the Southern Endowment Fund has facilitated our efforts to implement the ChumTC strategic plan, time constraints for committee members remain a challenge for task completion.*

Outline of Other Panel / Committee Tasks or Emerging Issues:

Budget availability and timing remain of concern. The capacity of the Parties to undertake assignments is being severely challenged by agency staffing and budget constraints, as well as limitations of funding to support PSC related activities. Uncertain appropriations and budget allocation decisions for both the U.S. and Canada impede the capacity of the CoTC to plan its schedule and complete tasks. The CoTC and CoWG may need to revise the work plan once budgetary and staffing limitations and requirements are clarified.

Potential Issues for Commissioners

Coho Technical Committee:

- (1) *Input and guidance from the Coho Working Group or Commissioners may be needed considering the upcoming transition to a new Southern Coho Agreement. The September-October period covered by the CoTC work plan may differ from the effective date of a new Southern Coho Agreement. The draft Southern Coho Agreement contains provisions that differ significantly from those in the current Agreement. This proposed work plan anticipates that CoTC efforts during this cycle will begin to deemphasize some old assignments and redirect CoTC resources to new tasks in anticipation that PSC annex renegotiations will be completed within the current cycle. Policy direction from the Coho Working Group or Commissioners may be needed regarding CoTC priorities.*
- (2) *Establish a process that provides the CoTC the opportunity to review relevant proposals that are submitted for Southern Endowment Fund support. In addition, progress and final reports for Southern Endowment Fund projects involving Coho should be routinely provided to CoTC for information.*

Potential Issues for Committee on Scientific Cooperation

None presently identified.

Proposed Meeting Dates and Draft Agendas

Proposed meeting dates and key activities planned for Southern Panel, Coho Technical Committee (CoTC), Coho Working Group (CoWG), and Chum Technical Committee (ChumTC) are listed in the following section. Additionally, a summary table by meeting date in 2018 is provided below. Attendance of panel and committee members may be dependent on available resources.

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Southern Panel Meeting Schedule:

- *January 8-12, 2018 – PSC Post Season Meeting, Portland, OR.*
- *February 12-16, 2018 – PSC Annual Meeting, Vancouver, BC.*
- *Also, see Coho Working Group meeting schedule in the table below, which will include a subset of Southern Panel members.*

Coho Technical Committee (CoTC) and Coho Working Group Proposed Meeting Schedule:

- *January 8-12, 2018 – PSC Post-Season Meeting, Portland, OR*
 - *Prepare for 2017 post-season assessment of impacts.*
 - *Continue work on assignments, specifically preparing for estimation of 2016 exploitation rates and revise work plan in light of new Southern Coho Agreement.*
- *February 12-16, 2018 – PSC Annual Meeting, Vancouver, BC*
 - *Use Coho Model to perform 2016 post-season assessment of impacts.*
 - *Present annual review of exploitation rates to Southern Panel.*
 - *Briefing on ocean environmental conditions to Southern Panel.*
 - *Continue work on Periodic Report (years 2010-2015).*
- *March 2018 – Coho Working Group; Panel chairs and select members.*
(Location TBD; possibly Arlington, WA)
 - *Annual manager-manager information exchange. Exchange preseason stock forecasts and fishery plans.*
- *May 2018 – CoTC, Seattle, WA*
 - *Finalize Coho Periodic Report (years 2010-2015) and initiate discussions with SFEC regarding Coho FRAM performance.*
- *July 2018 – Coho Working Group, Bellingham, WA*
 - *Review Coho Periodic Report. Work on assignments related to transition to new Southern Coho Agreement.*
- *Sept 2018 – CoTC (with SFEC-AWG), Seattle, WA*
 - *Meeting to assess discrepancies between CWT-based estimates of ERs with those produced by Backwards FRAM.*

Chum Technical Committee Proposed Meeting Schedule:

- *January 8-12, 2018 – PSC Post-Season Meeting, Portland, OR*
 - *Review and discuss preliminary post-season 2017 fisheries information*
 - *Collate and review report items for 2014 and 2015 final post-season report*
 - *Finalize 2014 and 2015 annual report for submittal*
 - *Continue work on Southern Chum genetic baseline inventory and expansion for adequately identifying stock origin of fish in mixed stock fisheries on both sides of the border*
 - *Continue to evaluate and test the 1st phase of ChumGEM*
 - *Updates on any completed SEF programs related to Chum*

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- *Review and discuss research and analysis activities essential to the Committee tasks*
 - *Provide any bilateral analyses, as requested by the Southern Panel.*
- *February 12-16, 2018 – PSC Annual Meeting, Vancouver, BC*
 - *Address any specific tasks assigned to the Committee by the Southern Panel at the January meeting*
 - *Continue work on tasks not completed at the January meeting*
 - *Assign workgroups and workgroup tasks for items still pending at the end of the February meeting*
 - *Continue work on 2015 annual report.*
- *May 2018 – PSC Chum TC Spring Meeting, location to be determined*
 - *Initiate 2016 annual report*
 - *Continue to define and develop Tier 2 components of the Southern Chum Strategic Plan*
 - *Review status of all SEF related projects and develop plan for new submission following identified priorities.*

Proposed Schedule of Meetings for 2017-18: PSC Southern Panel, CoTC, CohoWG, ChumTC			
When	Who	Location	Purpose/ Primary Tasks
<p><u>Jan 8-12, 2018</u> PSC Post Season Meeting</p>	<p>Southern Panel CoTC ChumTC</p>	<p>Portland, OR</p>	<p><u>Southern Panel:</u></p> <ul style="list-style-type: none"> • Annual Post Season Review • Assess status of renegotiation of Chapter 5 (Coho) and Chapter 6 (Chum); work on follow-up assignments or requests from Commissioners as needed. • Work on developing a bilateral process per the new Southern Coho Agreement (Chapter 5, Paragraph 11c new language) pertaining to either Party requesting MU-specific ER increases. • Present updates on the development of management objectives/breakpoints for Coho management units for the current Southern Coho Management Plan of Chapter 5. • Plan priority activities for future work. <p><u>Coho Tech Committee:</u></p> <ul style="list-style-type: none"> • Prepare for 2017 post-season assessment of impacts. • Continue work on assignments, specifically preparing for estimation of 2016 exploitation rates and revise work plan in light of new Southern Coho Agreement. <p><u>Chum Tech Committee:</u></p> <ul style="list-style-type: none"> • Review and discuss preliminary post-season 2017 fisheries information. • Finalize 2014 and 2015 annual report for submittal • Continue work on Southern Chum genetic baseline inventory and expansion for adequately identifying stock origin of fish in mixed stock fisheries on both sides of the border. • Continue to evaluate and test the 1st phase of ChumGEM • Updates on any completed SEF programs related to Chum
<p><u>Feb 12-16, 2018</u> PSC Annual Meeting</p>	<p>Southern Panel CoTC ChumTC</p>	<p>Vancouver, BC</p>	<p><u>Southern Panel:</u></p> <ul style="list-style-type: none"> • Pre-season data exchanges. • Work on any further follow-up tasks related to renegotiation of Chapters 5 and 6. • SEF priorities developed and presented by technical committees and endorsed by Panel. • Ocean Indicators presentation. • Receive presentation from CoTC on 2016 post-season ER estimates. • Update reporting requirements, and assign work as required for completion. <p><u>Coho Tech Committee:</u></p> <ul style="list-style-type: none"> • Use Coho Model to perform 2016 post-season assessment of impacts. • Present annual review of exploitation rates to Southern Panel. • Briefing on ocean environmental conditions to Southern Panel. • Continue work on Periodic Report (years 2010-2015). <p><u>Chum Tech Committee:</u></p> <ul style="list-style-type: none"> • Address any specific tasks assigned to the ChumTC by the Southern Panel at the January meeting. • Continue work on 2015 annual report. • Assign workgroups and workgroup tasks for items still pending at the end of the February meeting.
<p><u>March 2018</u> (date TBD)</p>	<p>Coho Working Group (CoWG); Panel chairs, select members</p>	<p>(TBD; possibly Arlington, WA)</p>	<p>Annual manager-manager information exchange. Exchange preseason stock forecasts and fishery plans.</p>
<p><u>May 2018</u> (date TBD)</p>	<p>CoTC</p>	<p>Seattle, WA</p>	<p>Finalize periodic report and initiate discussions with SFEC regarding Coho FRAM performance.</p>
<p><u>May 2018</u> (date TBD)</p>	<p>ChumTC</p>	<p>TBD</p>	<p>Initiate 2016 annual report Continue to define and develop Tier 2 components of the Southern</p>

Proposed Schedule of Meetings for 2017-18: PSC Southern Panel, CoTC, CohoWG, ChumTC			
When	Who	Location	Purpose/ Primary Tasks
			Chum Strategic Plan. Review status of all SEF related projects and develop plan for new submission following identified priorities.
July 2018 (date TBD)	Coho Working Group	Bellingham, WA	Review Coho Periodic Report. Work on assignments related to transition to new Southern Coho Agreement.
Sept 2018 (date TBD)	CoTC (with SFEC AWG)	Seattle, WA	Meeting to assess discrepancies between CWT-based estimates of ERs with those produced by Backwards FRAM.

Status of Technical or Annual Reports:

Southern Panel:

- *To be reviewed at the January 2018 Post Season meeting, with a plan developed to complete outstanding reporting requirements.*

Coho Technical Committee:

- *Work plans and status were reviewed through presentations at the 2017 PSC meetings.*
- *Tools were developed to improve report generation capabilities using data generated by Backwards FRAM. 2015 Post-season estimates of exploitation rates were presented to the Southern Panel at the February 2017 meeting in Portland.*
- *A report on the CoTC development of alternative coho management strategies was completed in August; the CoTC provided comments on a report on Alternative Coho Management Strategies was prepared by ESSA ltd.*
- *Efforts to update the Periodic Report (years 2010-2015) were initiated.*
- *Draft descriptions for most US MUs undergoing review. Completion of Canadian MU descriptions are pending determination of MU reference points anticipated in 2017.*
- *Annual report on CoTC priorities was developed for the Southern Fund Committee.*

Chum Technical Committee:

- *The committee anticipates having the 2014 Annual Report complete before the end of 2017.*
- *The committee anticipates having the 2015 Annual Report complete by the end of the PSC meeting in January 2018.*
- *The committee also plans to complete the 2016 report after the May 2018 ChumTC meeting.*

Comments:

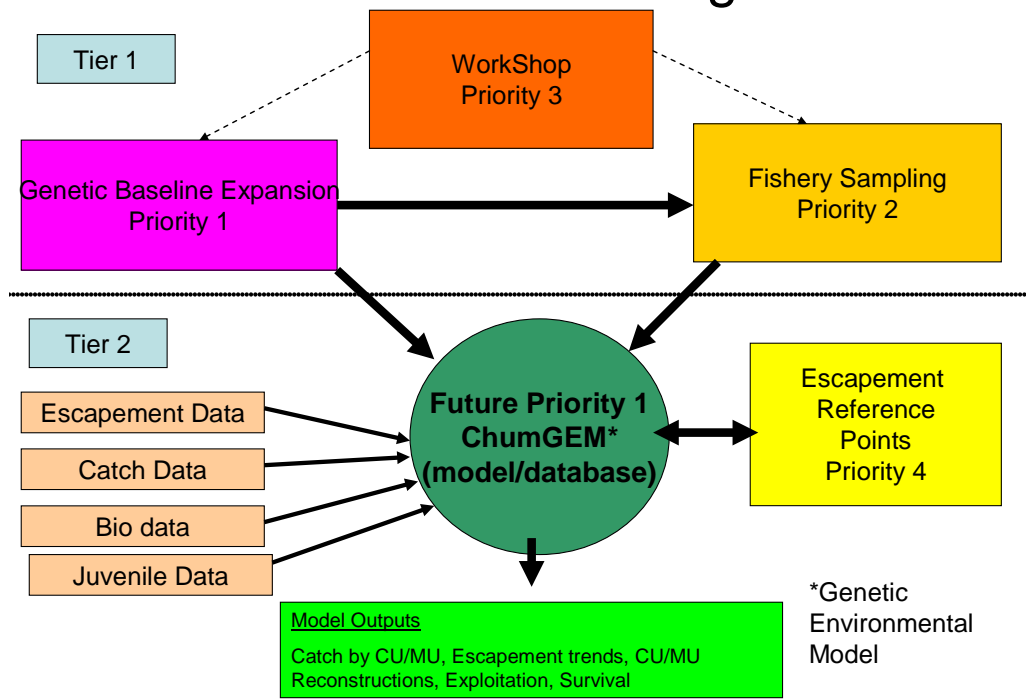
Coho Technical Committee:

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- The normal CoTC work plan developed to support implementation of the CoABM (Appendix 1, attached as a separate file) will be replaced by emphasis areas anticipated under the Southern Coho Agreement anticipated to be finalized this cycle. The proposed priority list for CoTC during the 2017-2018 cycle follows (high to low): (1) Generate estimates of 2016 ERs for MUs; (2) Informational outlook for 2018 ocean conditions; (3) Information exchange for 2018 preseason fishery planning; (4) Update periodic report; (5) Evaluate and improve performance of Coho FRAM; (6) Initiate deliberations regarding status determinations for Canadian MUs; (7) All other assignments to be undertaken on time available basis.

Chum Technical Committee:

Southern Chum Strategic Plan



PACIFIC SALMON COMMISSION
SELECTIVE FISHERY EVALUATION COMMITTEE WORK PLAN
October 2017 – September 2018

Panel / Committee:

Selective Fishery Evaluation Committee (SFEC).
SFEC Reports to the PSC Commissioners.
October 23-27, 2017, (Executive Session)

Update on Bi-lateral Tasks:

The PSC established the SFEC to assess impacts of mass marking and mark-selective fisheries on the viability of the CWT system. The SFEC has three components: (1) an Oversight Committee, comprised principally of the Co-Chairs of the PSC SFEC, Coho, Chinook, and Data Sharing Committees; (2) an Analytical Work Group (SFEC AWG), which is responsible for developing methods and conducting analyses of impacts of mass marking and mark-selective fisheries on the viability of the CWT program; and (3) a Regional Coordination Work Group (SFEC RCWG) which coordinates information sharing on mass marking and regional sampling programs, including electronic tag detection.

One of the main tasks of the SFEC is to review the proposals for mass marking (MM) and mark selective fisheries (MSFs) that are submitted annually to the PSC by the agencies conducting these activities. The annual reports summarizing the review of MM and MSF activities proposed for 2016 were published this year, and the report summarizing the 2017 activities is expected to be submitted by the PSC post-season meeting.

A letter to agencies requesting the completion of proposal templates for MM and MSF activities planned for 2018 will be distributed in October by the PSC Secretariat. SFEC has made modifications to the formats for MSF/MM proposals. As in the past three years, agencies have the option to provide MSF proposals in either a Word file format or in an Excel file format. Agencies have been requested to submit proposals to the PSC Secretariat by November 1. This year, the letter reminds agencies that reports of MSFs are required as part of the MOU.

The full bilateral SFEC is scheduled to meet in late November 2017. The main objectives of this meeting are to review MM and MSF proposals for 2018, complete the 2017 Annual Report, and finalize a draft report evaluating MSF impacts through double-index tag analysis.

Obstacles to Completing above Bi-lateral Tasks:

Post-Season Reports: Two post-season reports on MSFs are required for each MSF prosecuted to provide data needed by the Chinook (CTC) and Coho (CoTC) Technical Committees for implementation of PSC fishing regimes and for analysis of MSF impacts. The first report is to be submitted prior to the PSC annual post-season meeting following

the year in which the fishery was conducted. The SFEC continues to recommend that these tables with post-season information be included in the annual post-season reports submitted to the PSC by the US and Canada for the post-season meeting in January to simplify MSF reporting by agencies.

The timeliness and consistency of agencies in providing post-season reports for MSFs still needs to be improved. SFEC members have worked with agency staff through personal contact to obtain some of the requested data, but detailed stock-age-fishery impacts of MSFs on unmarked fish have not been forthcoming.

The second MSF report is to be provided by agencies prosecuting MSFs not later than November 30th following the year in which the MSF fishery occurred. This report is to provide stock-age-fishery estimates of mortalities of unmarked fish in MSFs. These reports are available in an online reporting system for Puget Sound Chinook salmon MSFs, but SFEC has not received any of the second type of MSF reports for other MSFs.

SFEC recommends that in late spring the PSC Secretariat send letters to agencies submitting MSF proposals to remind them of the need to notify the PSC and SFEC of details regarding MSFs as developed through their fishery planning processes.

Inability to estimate impacts of mixed-bag fisheries: Proposals for Chinook and Coho MSFs from all agencies include various forms of mixed-bag regulations (e.g., daily bag of 2 Coho, 1 of which can be unmarked), with varying degrees of complexity; further, the incidence of mixed-bag regulations is increasing. Because of the on-going variation of regulations employed for MSFs, the SFEC is unable to develop standardized methods for estimation of mortalities of unmarked fish. Additionally, catch sampling programs and analytical methods are generally inadequate to estimate impacts on marked and unmarked fish under these varying mixed-bag regulations. A description of the estimation methods being employed or planned to estimate MSF impacts in mixed-bag fisheries will be requested from agencies submitting MSF proposals such regulations in 2018 proposals. Without these improvements, the increasing incidence of mixed-bag fisheries will continue to reduce the accuracy of estimates of MSF impacts on unmarked fish.

Travel budget constraints: The SFEC is aware of the uncertainty surrounding travel budgets and the ability to convene in-person meetings of the committee and its work groups. The proposed schedule below reflects our intent to perform as much of the MM and MSF review, analyses and report development as possible via independent evaluation, emails, and conference calls. The number of in-person meetings has been reduced to the minimum necessary for the tasks assigned to the SFEC by the PSC.

Outline of Other Panel / Committee Tasks or Emerging Issues:

The CTC has been incorporating estimates of fishery impacts on unmarked wild stocks in its annual Model Calibration and CWT Exploitation Rate reports. Methods for estimation of impacts will need to be reviewed in light of implementation of an AABM MSF fishery in the SEAK troll fishery in 2016 and 2017. Review of recoveries of Chinook DIT releases in non-selective and selective fisheries and escapements, and their utility for estimation of impacts on unmarked fish in MSFs, is in progress by the SFEC-AWG. This work is of high priority.

The CTC has requested assistance from SFEC members regarding incorporation of MSF algorithms in the annual exploitation rate analysis, the PSC Chinook Model, and the annual Coastwide Chinook Model calibration. The required modifications are expected to occur in the next few years as the CTC-AWG proceeds with identified improvements to the structure and function of the computer programs currently being used. The priority to incorporate algorithms and data for MSFs may increase if recreational and commercial MSFs for Chinook continue to expand in AK, WA and BC coastal areas.

CWT-based CoTC post-season cohort reconstruction methods for direct estimation of MSF impacts are not feasible given the reduction of DIT programs and heavy reliance on MSFs. Due to a combination of factors, including reduced survival, reduced tagging, and reduced exploitation, tag recovery is inadequate for most, if not all, of our Coho stocks to utilize methods developed by the CoTC to estimate production expansion factors and exploitation rates. Therefore, CoTC relies on assumption-based methods, such as Backwards Coho FRAM to estimate post-season MSF and NSF exploitation rates and total mortalities of unmarked and marked fish using reported estimates of fishery encounters and releases.

Potential Issues for Commissioners:

Timely and accurate information via post-season reports on prosecuted MSFs is needed by the SFEC to assess the impacts of MM and MSFs on the CWT system. Little can be done without the post-season information from MSFs but to date, workload and other agency issues have resulted in few submissions. As noted above, post-season reports providing estimates of stock-age-fishery mortalities of unmarked fish have not been submitted to SFEC for all MSFs. WDFW and NWIFC s have developed a prototype reporting system that could expedite reporting of these data.

Joint SFEC-CTC meetings will be needed to develop algorithms and methods to incorporate the capacity to evaluate MSFS in the PSC Chinook Model. MSFs have been implemented at a spatial and temporal scale that is much finer than that employed in the CTC Model. Due to negotiations and budgetary constraints, the PSC will need to determine the priority to assign this activity.

Several agencies have dropped or are dropping DIT releases and are not recovering CWTs from unmarked DIT fish due to budget constraints. DIT groups require the release of paired groups of tagged fish and the use of electronic tag detection in recovering unmarked DIT fish from fisheries and escapements. (An additional complicating factor is the reporting of DIT recoveries in sub-sampled escapements without information required for expansion). DITs have two uses in evaluation of MSFs and estimation of their impacts. First, DITs with a marked and unmarked tag group provide the ability to quantify differences in mortalities between marked and unmarked fish as a result of MSFs for indicator stocks (reduced mortality on unmarked stocks is a primary goal of MSFs according to the PST (e.g., Chapter 3, paragraph 5(a)). The second use of DITs is to provide information to help bound estimates of stock-age-fishery mortalities of unmarked fish, required to maintain the viability of the coastwide CWT program.

SFEC is concerned that the Canadian catch sampling and reporting system is not fully aligned with the complexity of MSF regulations. Absent alignment, it is difficult to evaluate MSF impacts and compare recoveries of DIT groups not possible.

Status of Reports:

Technical or Annual Reports. The reports reviewing MM and MSF proposals for 2015 and 2016 have been published, and the report for 2017 is near completion. A report on Coho DIT analysis for brood years 1998-2011 (up to fishery year 2014) is expected to be completed in 2017.

Proposed SFEC Meeting Dates and Draft Agendas:

When	Who	Location	Purpose
Nov 27-30, 2017	SFEC RCWG, AWG	Seattle, WA	Review annual proposals for MM and MSFs submitted by agencies. Request clarifications from agencies as needed. Finalize draft DIT Analysis Report. Prepare summary report for PSC Commissioners. Review and revise format and content of post-season MSF reports, as necessary.
Feb. 12-16, 2018 (PSC Annual Meeting)	SFEC co-chairs	Vancouver, BC	SFEC Co-chairs report to PSC and identify any issues or concerns regarding agency proposals for 2018 MM and MSF, and status of post-season reporting.
Sept 2018	SFEC AWG	TBD	Work with CTC AWG to incorporate MSFs into CTC Model.

PACIFIC SALMON COMMISSION WORK PLAN
2017-2018

Panel / Committee:

Joint Technical Committee on Data Sharing (TCDS) and its subcommittee Data Standards Work Group (DSWG).

The Joint Technical Committee on Data Sharing functions as a steering committee for Coded Wire Tag (CWT) data sharing issues and liaises with the Chinook Technical Committee (CTC), Selective Fishery Evaluation Committee (SFEC), and Coho Technical Committee (CoTC) to improve CWT data to better support their analytical work to meet Treaty obligations. This Committee defines requirements needed for bi-lateral CWT data exchange and additional verification rules that would improve the integrity of the data.

The Data Standards Working Group (DSWG) sub-committee reviews requirements established by the TCDS, makes recommendations how to implement, and does the work of modifying the bi-lateral data exchange standards and verification process.

Data Sharing reports directly to the Commissioners.

Date:

This work plan will be presented to the commission during the 2017 Fall Session October 23-27, 2015 in Suquamish, WA.

Update on Bi-lateral Tasks Assigned Under Current PSC Agreement:

There were no specific bi-lateral tasks for this committee under the 1999 or 2008 PSC agreement other than the general agreement as described in the 1985 Memorandum of Understanding to maintain and make improvements to the CWT system. Since 1985, TCDS and DSWG have been maintaining and updating the CWT data exchange standards and verification process.

Following the work of the CWT Expert Panel, the CWT Workgroup and the CWT Improvement Team, we understand that the Commissioners want the TCDS to continue in the role of examining issues pertaining to CWT data. The new data specification standards that the committee will complete in 2018/19 will support analytical work of the joint committees and improve confidence levels, quality and accuracy of the data.

Obstacles to Completing above Bi-lateral Tasks:

1) Data Sharing Committee Membership

Participation at meetings and progress on addressing data sharing issues may be a low priority for members with other competing PSC Committee or PST negotiations workload.

Outline of Other Panel / Committee Tasks or Emerging Issues:

None

Potential Issues for Commissioners, including enhancement activities reported under Article V:

None

Potential Issues for Committee on Scientific Cooperation

None

Proposed Meeting Dates and Draft Agendas:

When	Who	Location	Purpose
January 2018	TCDS	conference call	Review and approve DSWG recommendations and timelines for implementation of updates to CWT data exchange specifications.
February 2018	TCDS	Portland, OR	Review and approve DSWG recommendations and timelines for implementation of updates to CWT data exchange specifications. An in-person meeting will occur only if there are significant issues to resolve that cannot be effectively addressed by the January 2017 conference call.
April 2018	DSWG	Vancouver, BC	Finalize documentation of updates to CWT data exchange specifications. Review new proposals for changes/improvements for data exchange.
September 2018	TCDS	Conference call	Complete CWT data sharing report containing new data exchange specifications. Review new requirements for changes/improvements for data exchange.

Status of Technical or Annual Reports:

DSWG has developed a standard formal process for documentation and review of proposals for change. By Sept 2018, TCDS, will complete a report containing updated data exchange standards and an implementation plan for improvements to CWT data sharing.

Comments:

No additional comments.

PACIFIC SALMON COMMISSION WORK PLAN
2017-2018

Panel / Committee:

Committee on Scientific Cooperation (CSC) reports to the Commission

Date: October 1, 2017

Update on Bi-lateral Tasks Assigned Under Current PSC Agreement:

At the 2017 Annual Meeting, the CSC presented a plan for Phase 2, “Developing a strategy for on-going consideration of annual environmental variability and its impact on salmon production and management.” Commissioners directed the CSC to “...expand on each strategy to identify mechanisms to deliver the recommendations through improved linkages and partnerships. The CSC will consider how the strategies would fit into future work plan items, and those items will be submitted for review and consideration by the Commission at the 2017 Fall Meeting.”

At the 2017 Annual Meeting, the CSC also presented its conclusions and recommendation on the review the CSC contracted with Northern Fund support to examine the current status of RFID (micro and PIT tag) technology and its potential to replace the PSC’s coast-wide Chinook and coho salmon CWT program.

1. Variation in Environmental Indicators

Update on 2016/2017 activities: In response to the Commissioners’ directive, the CSC has submitted a document for consideration at the 2017 Fall Meeting: *Elaboration of a strategy for consideration of annual variation in environmental indicators and salmon production and its implications for fisheries management under the Pacific Salmon Treaty*. In this document, the CSC provides more detail on the mechanisms, costs, and linkages to deliver the recommendations in the strategy. A summary listing of the component elements, responsible parties, initiation timelines, and estimated costs are included. The CSC has developed this plan in consultation with the Executive Secretary as to costs and participation of Secretariat staff in aspects of the possible actions.

Proposed 2017/18 activities: The Commissioners will determine activity of the CSC on this Work Plan element in their response to the submitted document. The possible actions in the strategy include range of options, from some that require relatively small resource commitments to implement, to others would require considerable commitments of time and funding. The Commissioners determination of which, if any, of the tasks outlined in the document should be pursued will define CSC activity on this element.

2. Review RFID Technology

Update on 2016/2017 activities: The report “Feasibility of Radio-Frequency Identification Tags for Marking Juvenile Salmon for Pacific Salmon Commission Management Applications” has been posted on the PSC web site as PSC Technical Report No. 36. The CSC provided the report to the CTC and CoTC for their review.

Proposed 2017/18 activities: The CSC will disseminate its conclusions and recommendations on the RFID report to the CTC and CoTC and host a short (1hr) meeting at the 2018 Post-Season Meeting to discuss future consideration of this tagging technology in relation to PSC management applications.

Obstacles to Completing above Bi-lateral Tasks:

Progress on the tasks identified in the strategy to address and document annual variability in environmental conditions and salmon populations will be contingent on the identification of priority activities for the CSC and on the feasibility of obtaining the funding support, where needed, to undertake the activities.

Outline of Other Panel / Committee Tasks or Emerging Issues:

- 1) Identification of Emerging Scientific Issues. The CSC has hosted a lunch-hour round table discussion approximately every other year with Technical Committee and Panel chairs and interested members to identify emerging scientific issues of importance to the PSC science community. These meetings have been important for providing direction and focus for CSC action. The CSC proposes to host another such meeting at the 2018 Annual Meeting.

- 2) International Year of the Salmon. Follow Commission directives for participation in the NPAFC/NASCO/PICES Year of the Salmon initiative. The Commission has identified the Executive Secretary as the potential point of contact for PSC participation in the Year of the Salmon (YOS) Initiative. As per the Commission’s directive, the CSC has no direct role in YOS planning or implementation. The Canadian CSC members are involved in the YOS planning as part of their professional responsibilities outside of CSC activities, and will keep the US CSC informed as to the progress on this international scientific initiative.

Potential Issues for Commissioners:

N/A

Potential Issues for Committee on Scientific Cooperation:

The CSC welcomes the opportunity to review suggestions put forward by the Panels and Technical Committees and remains prepared to address any priority issues identified by Commissioners.

Proposed Meeting Dates and Draft Agendas:

All members of the CSC plan to teleconference in October and November and to meet at the January and February PSC meetings. The CSC agenda will include: 1) Update this Work Plan as necessary to include activities the Commissioners identify at the 2017 Fall Meeting from the strategy on environmental variation; 2) Brief the Commission on the updated Work Plan and how it will be implemented; 3) Consult with the CTC and CoTC on recommendations for future consideration and tracking of RFID technology; 4) Consult with Technical Committee and Panel chairs on emerging scientific issues.

Status of Technical or Annual Reports:

As noted above, the report “Feasibility of Radio-Frequency Identification Tags for Marking Juvenile Salmon for Pacific Salmon Commission Management Applications” has been posted on the PSC web site as PSC Technical Report No. 36. The report entitled “Atmospheric and Oceanic Extrema in 2015 and 2016 and their Effect on North American Salmon” has been published as Technical Report No. 37.

Comments: N/A

**Elaboration of a strategy for consideration of annual variation in
environmental indicators and salmon production and its implications for
fisheries management under the Pacific Salmon Treaty**

Provided by the Committee on Scientific Cooperation to the Pacific Salmon Commission

16 September 2017

At its January 2016 Post-season Meeting, the Commission directed the Committee on Scientific Cooperation (CSC) to develop a plan for documenting anomalous environmental conditions and evaluating their implications for salmon production under the Pacific Salmon Treaty: “By the 2016 Annual Meeting, the CSC shall collaborate with appropriate experts and develop a proposal for annual collation of data on the environment, run size, fish condition, and other metrics that may reveal anomalies in salmon survival.” In response, the CSC developed an outline of actions that could be undertaken to address this directive.

The CSC envisioned a two-phase approach to considering and evaluating environmental and biological anomalies as outlined in its 2016 workplan to the PSC. Phase 1 involved a contract let to Dr. Skip McKinnell to a) document variation in these parameters observed in 2015 and, where feasible, 2016; and b) assess this variation and its implications for PSC management of its fisheries in view of historical patterns of anomalous environmental conditions. In Phase 2, the CSC proposed to develop a strategy for consideration of annual variation in environmental conditions and its implications for salmon production and its management.

At its October 2016 meeting the Commission instructed the CSC to complete Phase 1 by the January 2017 Post-season Meeting and present its strategy for delivering Phase 2 at the February 2017 Annual Meeting.

At the January meeting, the CSC submitted to the Commission part a) of Dr. McKinnell’s report, which provided the documentation of environmental and salmon metric anomalies in 2015 and, where available, 2016. The CSC submitted part b) of Dr. McKinnell’s report at the February Annual Meeting, and Dr. McKinnell presented his findings to the PSC community on February 15, 2017, completing Phase 1. Dr. McKinnell’s final report incorporating both parts a) and b) has been published by the PSC as Technical Report No. 37. Dr. McKinnell’s analysis described in detail a number of anomalies, including extreme values relative to the available historical record, for both environmental and salmon indicators in both years. The salmon anomalies included unusual observations of abundance, phenology, and adult size, and included a number of extrema. The degree and number of strong anomalies and extrema observed in 2015 and 2016 relative to historical records were unprecedented, and they may be indicative of greater uncertainty and variability in the coming years. These findings underscore the increasing recognition by technical experts and managers of the value and need to consider environmental variation in forecasting and managing salmon populations.

At the 2017 Annual Meeting, the CSC presented a plan for Phase 2, “*Developing a strategy for on-going consideration of annual environmental variability and its impact on salmon production and management.*” The CSC used the findings and recommendations from Dr. McKinnell’s

report, previous input from the 2015 CSC meeting with Chairs and interested members of the PSC's Technical Committees and Panels, as well as comments from Secretariat staff and reviewers of earlier drafts of the Phase 2 approach, to develop its strategy for applying environmental and biological variation to assist in PSC management of its salmon fisheries. The CSC recommends the Commission give implementation of this strategy serious consideration because anomalous conditions can have profound impacts on salmon production and, consequently, the management of PSC salmon fisheries. Whereas the relationship between large-scale variation in environmental features and fluctuations in salmon abundance and life history remains poorly understood, there are many examples that demonstrate the importance of monitoring and measuring environmental and biological parameters for forecasting salmon survival, year-class strength, run-timing, or distribution. These include NOAA's Ocean Ecosystem Indicators program off the Oregon/Washington coast, DFO's Fraser River sockeye forecast program, and NOAA's Southeast Alaska Coastal Monitoring program. Such examples underscore the importance of improving information flow and communication on environmental variability among the PSC community such that it will be better able to manage salmon fisheries and populations under a changing climate.

In broad terms, this Phase 2 strategy identified means to:

- A) Improve information sharing and access to measures of environmental and biological variability, including salmon population metrics;
- B) Develop a capacity for compiling and evaluating annual variability in environmental and salmon indicators to provide an information base to assist in forecasting and managing salmon populations;
- C) Inform the Commission and its science community annually on observations of changing environmental conditions and their relation to salmon production; and
- D) Engage other international organizations through initiatives such as the International Year of the Salmon to enhance and leverage PSC capacity and efforts to address A) to C).

As noted by the Commission in its response to the CSC Phase 2 strategy, some of the recommendations in the strategy would require relatively few resources to implement, while others would take considerable time and effort. The Commission directed the CSC to "expand on each element of the strategy to identify mechanisms to deliver the recommendations through improved linkages and partnerships."

In this document, the CSC provides more detail on the mechanisms, costs, and linkages for the four components of the strategy listed above. A summary listing of the component elements, responsible parties, initiation timelines, and estimated costs are presented in Table 1. The CSC developed this expanded strategy in consultation with the Executive Secretary in order to estimate costs and feasibility of Secretariat staff participating in the delivery of certain elements. The CSC realizes that funding for the PSC is extremely tight, and is not making a request for

specific funding at this time, but rather providing options to address the Commission’s directive to the CSC with estimates of associated costs. We have identified activities that can be accomplished with no increase in funding (“base” costs), as well as activities that will require additional support by the Parties, or other funding sources.

The CSC recognizes that whereas “base” costs require no increase in funding, they do include the cost to the Parties of continued CSC participation at levels of activity commensurate with the average over the past five years. This includes travel support for the Post-season and Annual meetings, professional time dedicated to CSC activities at these meetings, and 30-40 hours of professional time per CSC member throughout the remainder of the calendar year. It also includes the costs for the Secretariat staff to structure and manage the web-based portal envisioned for improving the exchange of and access to information on variability in environmental conditions and salmon production.

A) Improve information sharing and access to measures of environmental and biological variability, including salmon population metrics.

The CSC recommends that a web portal be developed to facilitate the gathering and exchange of relevant data and information. The portal development and maintenance can be incorporated into the existing PSC website using current staff expertise. Minimal new funds would be required to implement this recommendation. The portal would include the following three functions.

1. Establishment of a web-based forum for sharing information among the Technical Committees and Panels. The forum would provide the opportunity for posting in-season and post-season observations; physical and biological environmental indices; estimates of salmon survival and production; salmon life history characteristics such as run timing and size at age; relevant citations and technical reports; and discussion of implications of anomalies and environmental trends for management of PSC fisheries and forecast models. Information would depend on voluntary participation by the PSC science community. An example of such a scientific forum in the salmon science world is the Salmon Ocean Ecology forum on Basecamp (<https://launchpad.37signals.com/basecamp/2893987/signin>). SharePoint would probably be the platform for such a forum for the PSC, in conjunction with SharePoint sites for the PSC Technical Committees. Participation in the forum would be password protected and initially limited to the PSC community. There will be the capability to expand the forum in the future by providing access to organizations such as the NPAFC that have information holdings or other contributions of direct relevance.

This element could be initiated in early 2018, utilizing base cost resources for PSC staff and the CSC. The purpose and structure of the forum would be an item

of discussion at the proposed meeting of the CSC with Technical Committee and Panel chairs at the 2018 Annual Meeting.

2. Identification of web links to existing digital data sets and search engines. The CSC would coordinate collecting the relevant links for posting on the web portal. Link fields would be developed for: environmental and salmon data sets relevant to PSC Technical Committee activities, e.g., RMIS, PDO, NPI, ONI, CUI, ENSO, Columbia River dam counts, and Fraser River hydro-acoustic counts; reference sources for publications and data, e.g., NPAFC, PSC, CDFO, NOAA, ADFG, WDFW, and ODFW; and search engines, e.g., Web of Science and Google Scholar. (See Table 2 for list of acronyms.)

This element could be initiated in early 2018, utilizing base cost resources for PSC staff and the CSC.

3. Investigation of ways to improve access to relevant literature on salmon, including grey literature. The CSC would work in collaboration with the PSC librarian on this element. The CSC would discuss how to improve literature accessibility with Technical Committee and Panel chairs at the proposed meeting of the CSC with Technical Committee and Panel chairs at the 2018 Annual meeting. The CSC would also contact other salmon research organizations, such as NPAFC, to look for improving sharing access to information resources.

This element could be initiated in early 2018, utilizing base cost resources for PSC staff and the CSC.

B) Develop a capacity for compiling and evaluating annual variability in environmental and salmon indicators to provide an information base to assist in forecasting and managing salmon populations.

This task would require active data acquisition, management, and evaluation, and specific expertise for the analyses of the data. This task would require identifying indicators and metrics of environmental and salmon variability for coast-wide annual tracking; collating information on these indicators and metrics, and providing annual summaries; and analyzing trends in variability at the appropriate spatial and population scales in the context of the historical record. Outcomes would include a searchable, coast-wide information system coordinated between the U.S. and Canada, facilitating assessment of annual data; annual evaluation of the covariation of environmental variation and salmon production; and timely reporting of analyses to the PSC community. This task is analogous to a continuation and refinement of the McKinnell reports on an annual basis.

The CSC identified two possible approaches to this task, each of which would require substantial increased funding.

1. The first approach is to create a full-time PSC position responsible for the data compilation and evaluation. The staff position would be in the PSC office of modeling and data management. This approach has the advantage of having a focal point for identification of environmental and biological indicators, data compilation, communication with other researchers in the field, and dissemination of results to the PSC community. To function effectively, this approach assumes the maintenance of the PSC database management capacity. The CSC would be available in an advisory capacity on issues such as identification of indicators and analytical approaches. The CSC could also help facilitate cooperation and collaboration of the staff position with on-going efforts in other organizations to monitor and evaluate the effects of environmental variation, such as the State of the Oceans, State of the Salmon, the State of the California Current, and similar programs

An advantage of a dedicated staff position is that it would allow development of real-time monitoring of indicators as well as annual review and reporting. In-season updates, trends and changes in indicators could be provided to the PSC.

The estimated annual cost for a staff position and associated support costs is \$150,000. Because undertaking this cost would be contingent on identification of a funding increment in the PSC budget, initiation would not be possible until 2019/2020 at the earliest.

2. The alternative approach is to establish a working group of experts to provide the identification of environmental and biological indicators, compilation of data, and the analytical approach. The advantage of such a working group would be a broader perspective on identifying metrics, developing the data base, and the analytical approach. This working group could be formed as an Ad-Hoc Committee with members appointed by the Parties. The CSC recommends the group be composed of 2-4 experts from each Party. As with other committees, there are costs to the Parties for staff time for the appointed experts and travel support for meetings. Annual costs would also need to account for administrative oversight and collaboration from the PSC staff, including maintenance of the PSC database management capacity.

The CSC would be available in an advisory capacity on issues such as identification of indicators and analytical approaches. The CSC is also communicating with experts on salmon status as to the framework and requisites for a working group approach.

Another advantage of this approach is that it ensures collaboration among the experts from each Party assigned to the working group. Expertise could be drawn from

participants in some of the programs already identified, e.g., State of the Salmon in Canada and State of the California Current in the Pacific Northwest. Because such collaboration is essential to the success of these programs, participation in the working group could not only provide a mechanism for annually informing the PSC, but also enhance the capacity of the participants in their initiatives in particular geographic areas.

The CSC estimates overall annual costs to be \$50,000-\$200,000 for this approach including staff time travel, IT support, and administrative oversight. The wide range to the estimate relates to the determination of the number of individuals that would be appointed to the Committee from each party, and how the parties would cover staff time, i.e., base funding of salary support versus identified funding increments. Because this element would require a funding increment in the budgets supporting PSC activities of the Parties, initiation would not be possible until 2019/2020.

C) Inform the Commission and its science community annually on observations of changing environmental conditions and their relation to salmon production.

1. The CSC would summarize development and activity of the communication forum as part of the CSC annual report. This task could be incorporated into the CSC's workplan at base cost. Assuming the forum is initiated in 2018, the CSC would provide the first summary in its 2019 Annual Report.
2. The CSC would organize and manage an annual mini-workshop of 2 hours duration at which invited experts present perspectives on the state of the ocean and the state of salmon from different regions across the North Pacific Rim. The workshop would be scheduled as an open session at the PSC Annual Meeting. The workshop would require an annual budget for coordination and invitational travel for speakers of \$10-15K. The CSC could pursue support from the Fund Committees as part of the 2018 solicitation for supporting a workshop series beginning in 2020. The CSC would include discussion of information sharing and workshop development at the proposed meeting of the CSC with Technical Committee and Panel chairs at the 2018 Annual meeting.

Contingent on funding for component B, the responsible staff person or the working group would provide an annual report to the Commission, summarizing data collection and collation and presenting annual summaries. Cost would be covered as part of the Component B budget. If Component B was funded in 2019/2020 cycle, the first annual report would be available in 2021.

D) Engage other international organizations through initiatives such as the International Year of the Salmon to enhance and leverage PSC capacity and efforts to address A) to C).

The PSC is not alone in needing to monitor and understand a rapidly changing environment. In fact, understanding will come from observations on salmon stocks and associated environmental indicators at the local, North Pacific Ocean, and hemispheric scales. A number of scientific groups are evaluating the impacts of climate change and environmental variation on salmon and other organisms.

- 1. Develop information exchange mechanisms between PSC-CSC, NPAFC-CSRS, NASCO-Scientific Committee and ICES/PICES, including data sharing and comparisons of salmon stock trends across space and time.** The focus of this element would be to identify web-based data bases and technical report bibliographies that could then be included in the link fields developed under component A.2. Communications between the Executive Secretary and his counterparts in other organizations could include identifying such links. Similarly, CSC member participation in science fora at other organizations would be a conduit for identifying links and conducting collaborative joint analyses. No additional funding above base costs would be required; links could be entered into the web portal in 2018, assuming the Commission approves its establishment.
- 2. Participation in the NPAFC/NASCO/PICES/ICES International Year of the Salmon initiative.** This initiative is being developed to effectively partner organizations across the northern hemisphere that like the PSC have a need to understand and cope with recent declines in productivity and increasing variability in almost all aspects of salmon fisheries. A partnership with shared information and focused joint research within and across the Pacific and Atlantic basins will leverage existing capacity and attract additional sources of funding supporting the timely and effective development of the elements required for resilient management systems. The IYS is in the planning phase with an opening event to be held in the fall of 2018 and a focal year of outreach and research in 2019. Research and outreach will continue through 2022. The Commission has identified the Executive Secretary as the potential point of contact for PSC participation in the IYS initiative. The CSC sees merit in continued engagement to enhance PSC capacity for information sharing and potentially for joint research.

Table 1. Summary of elements identified by the CSC to address improved information sharing and access, compilation of environmental metrics, and review of annual status of environmental variability and impacts on salmon. Costs are in U.S. dollars.

Element	PSC Staff	CSC Role	Time Line	Cost
A.1.Web-based forum	IT support	Initiating, informing	2018	PSC: Base, no additional funds CSC: Base, no additional funds
A.2.Link fields for search engines and data sets	IT support	Identification, categorization of links for inclusion	2018	PSC: Base, no additional funds CSC: Base, no additional funds
A.3.Improve literature accessibility	IT, Library support	Investigate collaborative access to relevant published and grey literature	2018	PSC: Base, no additional funds CSC: Base, no additional funds
B.1. Compiling and evaluating annual variability in environ. and salmon indicators: staff position	New full-time position	Advisory	Dependent on PSC funding increment 2019/2020	PSC: \$150,000 CSC: Base, no additional funds
B.2. Compiling and evaluating annual variability in environ. and salmon indicators: expert working group (committee)	Administrative support and oversight	Advisory	Dependent on PSC funding increment 2019/2020	PSC: \$50,000-\$200,000 CSC: Base, no additional funds
C.1. Summary of web forum activity	IT support	Summary report	Annual report 2019	PSC: Base, no additional funds CSC: Base, no additional funds
C.2. Annual Workshop on on the state of the ocean and the state of salmon from different regions across the North Pacific Rim	Admin, logistic support	Funding proposals, workshop organization and facilitation	Dependent on Northern/Southern Fund support 2019	Grant funding of \$10,000-\$15,000 PSC: Admin costs included in grant CSC: Base, no additional funds

C.3. Annual report from Component B	Staff position if funded	None	2021	PSC: Costs included in budget for Component B CSC: None
D.1. Develop information exchange mechanisms with other international organizations	IT support Exec. Sec. communication with other organizations	CSC communication with colleagues, web links identification	2018	PSC: Base, no additional funds CSC: Base, no additional funds
D.2. International Year of the Salmon	Executive Secretary	Continue current participation level	2017-2022	PSC: Base, no additional funds CSC: Base, no additional funds

Table 2. List of Acronyms

ADFG	Alaska Department of Fish and Game
CDFO	Canada Department of Fisheries and Oceans
CSC	Committee on Scientific Cooperation
CSRS	Committee on Scientific Research and Statistics
CUI	Coastal Upwelling Index
ENSO	El Nino Southern Oscillation
ICES	International Council for Exploration of the Seas
IT	Information Technology
IYS	International Year of the Salmon
NASCO	North Atlantic Salmon Conservation Association
NOAA	National Oceanic and Atmospheric Administration
NPAFC	North Pacific Anadromous Fish Commission
NPI	North Pacific Index
ODFW	Oregon Department of Fish and Wildlife
ONI	Oceanic Nino Index
PDO	Pacific Decadal Oscillation
PICES	North Pacific Marine Science Organization
PSC	Pacific Salmon Commission
RMIS	Regional Mark Information Center
WDFW	Washington Department of Fish and Wildlife



March 6, 2017

MEMORANDUM

TO: Rebecca Reid, Chair
Charlie Swanton, Vice-Chair

FROM: John Field, Executive Secretary

CC: Committee on Scientific Cooperation

RE: Results from the International Year of the Salmon North Pacific Steering Committee meeting

At its 32nd Annual Meeting (February 2017; Portland), the Commission agreed to the following:

The Executive Secretary will liaise with the CSC to provide a report on the International Year of the Salmon Steering Committee meeting (February 28 - March 1, 2017), and provide this to the Chair and Vice-Chair by April for review. Commission consideration of this report will occur later in 2017.

This memo responds to that directive. I attended the Steering Committee meeting with CSC members Mark Saunders (DFO, retired) and Carmel Lowe (DFO), who attended in non-PSC capacities. Mark serves as the principal contact for the IYS initiative at the North Pacific Anadromous Fish Commission (NPAFC), while Dr. Lowe attended as the DFO Regional Director for Science. PSC Commissioners Sprout and Riddell also attended in their professional capacities and joined a variety of scientists, fishery managers, and non-profit leaders at the event. Canada, Japan, Korea, Russia, the United States, and First Nations/Tribes were all represented.

The meeting had several goals, namely:

1. Provide an update on the IYS initiative, scope, and purpose
2. Confirm the IYS governance arrangements
3. Consider approaches to and engagement of partners in planning, communications, and fund development.

There are some conceptual agreements about the IYS at this early stage:

1. Atlantic and Pacific Rim countries have different goals for the IYS, as agreed through their respective organizations in 2016. Atlantic parties (via the North Atlantic Salmon Conservation Organization (NASCO)), wish to utilize IYS as a short-term outreach and education tool about the plight of Atlantic salmon. The Pacific parties (organized through NPAFC) envision a 7-8 year burst of coordinated research and discourse on the resiliency of Pacific salmon and associated human societies in a changing world.

2. Given the disparate goals, the parties will establish separate steering committees for the respective oceans. These will communicate via a small coordinating committee comprised of NASCO and NPAFC representatives.
3. The North Pacific Steering Committee will ideally comprise 12-15 individuals representing range state countries, the NPAFC Secretariat, and as yet unspecified “core partners”. Subject matter experts may be engaged as necessary on particular topics.
4. IYS should commence with a symposium or “congress” in late 2018 or early 2019 involving keynote speakers, policy makers, and scientists from both oceans. This symposium may focus on science, or target a broader audience to educate and engage decision-makers about the challenges and importance of managing salmon sustainably.
5. Early funding strategies must be crystallized and implemented. At this stage, it seems clear there are a variety of needs:
 - a. Kick-off symposium: contributions must be sought quickly from interested organizations, governments, and individuals.
 - b. North Pacific research projects: individual governments and organizations will fund key projects that are deemed within the scope of IYS priorities (via an unspecified review process).
 - c. IYS Secretariat: there should be a fixed, small staff to coordinate activities in the North Pacific, which could be funded through in-kind personnel contributions and housed at the NPAFC Secretariat.

Relevance of the IYS to PSC priorities and mandates is undetermined but potentially significant. While the Pacific Salmon Treaty’s principles do not specify broad international engagement, Canada and the United States may benefit from certain IYS’ goals if they are achieved. Specifically, the two Parties may: a) help shape the future of international salmon data formats and transparency; b) engage legislators and other appropriators about the importance of salmon to the region and the world; and c) benefit from early research results on salmon ecology in a changing environment.

My recommendation is that, if invited, I participate as a member of (or advisor to) the IYS North Pacific Steering Committee. Since most meetings are anticipated to be virtual or via correspondence, there will be little financial burden on the PSC. This way, I can keep the Parties apprised of IYS developments in real time and alert them to possible intersections with PSC activities and needs.

Established by Convention
for the Conservation of
Anadromous Stocks in the
North Pacific Ocean



**NORTH PACIFIC
ANADROMOUS FISH
COMMISSION**

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P R E S I D E N T

October 6, 2017

Ms. Rebecca Reid
Mr. Charles Swanton
Pacific Salmon Commission
600-1155 Robson Street
Vancouver, B.C.
Canada V6E 1B5

Dear Ms. Reid and Mr. Swanton,

Over the past year Mr. John Field has participated in the International Year of the Salmon (IYS) North Pacific Steering Committee as the representative of the Pacific Salmon Commission. We have very much appreciated his contribution to our face to face meeting last spring and his support for the NASCO and NPAFC President's meeting. Mr. Joannes Hansen, the President of the North Atlantic Salmon Conservation Organization (NASCO) and I, joined NPAFC staff and Mr. Field in tours of the Johnstone Strait test fishing and Mission-Qualark hydroacoustic operations. Mr. Hansen also had the opportunity to briefly meet with Rebecca and me on the final day of his visit. Formal and informal conversations highlighted the similarity of the challenges we have in both ocean basins in dealing with declining and increasingly variable productivity of salmon and the potential benefit in having the three large salmon conservation RFMO's across the hemisphere collaborate through the IYS to leverage their own investments in developing solutions.

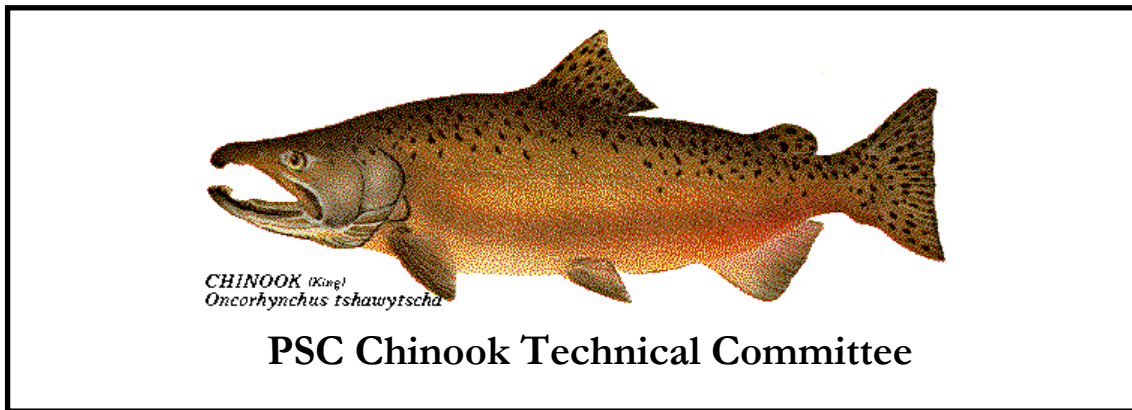
We consider the PSC to be an important core partner in the IYS and we invite the PSC to continue to support the participation of Mr. Field or another representative of your choosing to continue as a member of the IYS North Pacific Steering Committee for 2018. Mr. Mark Saunders, our Director of the IYS in the North Pacific is at your disposal should you require any further information and is available to update the Commission at any of your upcoming meetings should you request it.

I look forward to continuing to build on strong connection we have with the Pacific Salmon Commission.

Regards,

Dr. Carmel Lowe

President
North Pacific Anadromous Fish Commission



PACIFIC SALMON COMMISSION WORK PLAN
2017-2018

Panel / Committee:

The Chinook Technical Committee reports to the Pacific Salmon Commission.

Date: PSC Fall Session - October 23-27, 2017

Update on Bi-lateral Tasks Assigned Under the Current PSC Agreement:

CTC Work Plan Tasks Assigned for 2017

1. Annual Analyses

- 2017 Chinook exploitation rate analysis (ERA) - *Completed*
- 2017 Chinook Model Calibration - *Completed*

2. Annual Reports

- 2017 Catch and Escapement (C&E) report - *Completed*
- 2017 Calibration and Exploitation Rate Analysis (CLB&ER) report - *In Progress*

3. Ad-hoc Reports

- Chapter Three Performance Review errata - *Completed*
- 2015/2016 Exploitation Rate Analysis output data notebook - *Completed*
- Phase 2 of the base period recalibration of the PSC Chinook Model - *In Progress*

4. Ad-hoc Analyses

- Investigation and implementation of mark-selective fishery algorithms in the annual exploitation rate analysis - *In Progress*

- Escapement goals presented for review and acceptance will be evaluated by the CTC - *None have been brought forward for review*
- Feasibility assessment of the expert panel's final report of forecast methodologies - *Completed*
- Testing and validation of the DGM - *No progress due to final coding not yet completed*
- Modify Chinook model, test, and implement stock specific growth functions and agency estimates of shakers - *No progress*

Proposed List of CTC Work Plan Tasks for 2018 and Beyond

1. Annual Analyses

- 2018 ERA
- 2018 Chinook Model Calibration

2. Annual Reports

- 2018 C&E report
- 2018 CLB&ER report

3. Ad-hoc Reports

- Phase 2 of the base period recalibration of the PSC Chinook Model

4. Ad-hoc Analyses

- Investigation and implementation of mark-selective fishery algorithms in the annual exploitation rate analysis - *On 2017 work plan*
- Escapement goals presented for review and acceptance will be evaluated by the CTC
- Testing and validation of the DGM - *On 2017 work plan*
- Modify Chinook model, test, and implement stock specific growth functions and agency estimates of shakers - *On 2017 work plan*
- Testing and validation of ForecastR - *In 2017 deferred to 2018 work plan*
- Testing and validation of CIS - *In 2017 deferred to 2018 work plan*
- Review of Attachments I-V - *In 2017 deferred to 2018 work plan*
- Phase III Model Improvements - *In 2017 deferred to 2018 work plan*
- Implementation of MSF capability in the Chinook Model and related stratification of stocks and fisheries, time periods; modify Chinook Model to use forecasts of cohort abundances; etc. - *In 2017 deferred to 2018 work plan*
- Scope the representativeness of coded-wire-tag indicator stocks in relation to other wild/hatchery stocks they are intended to represent - *In 2017 deferred to 2018 work plan*

Obstacles to Completing above Bi-lateral Tasks:

Time Constraints

As in previous years, the primary obstacle is the amount of time and effort required to complete the large number of tasks assigned to the CTC under the 2009 agreement and the technical complexity of those tasks. Although the formation of smaller CTC workgroups to address individual assignments creates some efficiency, the necessity of assigning CTC members to multiple workgroups creates bottlenecks. There will undoubtedly be scheduling conflicts for workgroup meetings and CTC members will have to prioritize their workloads among the workgroups to which they belong. In the coming year, there will also be additional demands on CTC members to provide data and analyses in support of renegotiation of the Chinook chapter of the Treaty. It is difficult to predict the number and complexity of these assignments and additional bilateral CTC meetings beyond those detailed in this memo could be required.

Funding Constraints

The MI funds paid for a large portion of AWG travel during the past six years. However, the funds were exhausted during 2016 and funds available for CTC travel may be limited due to budget constraints in both the Canadian and US sections. Meeting costs have the potential to significantly impact the CTC's ability to complete the ERA, PSC Chinook Model calibration, MI tasks, and annual reporting.

Policy Issues

Progress could be hindered by policy issues that arise in the workgroups, and subsequent lack of resolution by the Commission.

Outline of Other Panel / Committee Tasks or Emerging Issues:

None.

Potential Issues for Commissioners:

CWT Sampling Programs

The viability of the coastwide CWT program depends on stable funding for tagging, sampling and reporting programs. A funding source needs to be identified to maintain the integrity of the coastwide CWT program. The CWT program remains the only tool that provides the coastwide data required for implementation of the current PST Chinook agreement.

Transition Planning

During the past several years the CTC has lost three AWG members, and is anticipating the loss of additional AWG members in the near future (e.g., Marianna Alexandersdottir retires on Dec 31, 2017). Succession planning is needed in order to provide continued capacity to implement

and evaluate the requirements of Chapter 3 of the PST Agreement. Of particular concern is the loss of key programmers and the need for additional programming support for key CTC programs in VB.net, R and new programming expertise in SQL for querying Access databases.

Chinook Model Improvements

As mentioned earlier, any modifications or improvements to the PSC Chinook Model, including the BPC, have the potential to alter the time series of AIs and the historical relationship between AIs and landed catches. When the historic estimates of these indices change the CTC will need guidance from the PSC in order to maintain the historic relation between catch and the abundance indices as specified under the current Agreement.

Chinook Model Improvement Funds

The CTC has exhausted all of the MI funds. Future MI work that cannot be accomplished during the CTC's usual course of business will need to rely on the US Chinook Abundance Based Management Implementation Funding, Northern or Southern Endowment Funds, or some new funding source.

Potential Issues for Committee on Scientific Cooperation:

None.

Proposed Meeting Dates and Draft Agendas:

Meeting Locations: The meeting schedule proposed for 2017-2018 includes six full bilateral CTC meetings and two additional CTC-AWG meetings. The schedule also includes a US Chinook Abundance Based Management Implementation Funding meeting. Additional CTC meetings may be required, depending on the number and scope of additional tasks assigned to the CTC.

November 6-9, 2017. The bilateral CTC will meet in Seattle, WA to complete the 2017 CLB&ER report. The CTC will also continue the investigation and implementation of mark-selective fishery algorithms in the annual exploitation rate analysis

December 11-12, 2017. The U.S. CTC will meet in Portland, OR for the annual U.S. Chinook Abundance Based Management Implementation workshop. The U.S. CTC will review continuing and completed projects, and will develop a request for proposals for the 2018 Abundance Based Management funds.

January 8-12, 2018. The bilateral CTC will meet during the PSC Post-season meeting in Portland, OR. The CTC will work on outstanding annual reports, begin work on the 2018 C&E report and will work on other workgroup assignments as time permits.

February 12-16, 2018. The bilateral CTC will meet during the 33rd PSC Annual meeting in Vancouver, BC. The AWG will continue work on the ERA and begin work on the 2018 PSC

Chinook Model calibration. The CTC will work on outstanding annual reports, begin work on the 2018 C&E report and will work on other workgroup assignments as time permits. The U.S. CTC will reach consensus on its LOA funding recommendations for 2018.

February 26-March 2, 2018. The bilateral CTC AWG will meet in Vancouver, BC to complete the annual Chinook ERA and continue work on the 2018 PSC Chinook Model calibration.

March 12-16, 2018. The bilateral CTC AWG will meet in Portland, OR to continue work on the PSC Chinook Model calibration and produce a final calibration. The CTC will report the 2018 preseason AIs and allowable catch targets for the AABM fisheries to the PSC Commissioners by April 1.

May 7-11, 2018. The bilateral CTC will meet in Seattle, WA to finalize the C&E report and draft the CLB&ER report and continue work on outstanding CTC assignments.

June 4-8, 2018. The bilateral CTC will meet in Juneau, AK to draft the CLB&ER report and continue work on outstanding CTC assignments. The CTC will also review progress on workgroup assignments to date and assign tasks for the summer.

September 17-21, 2018. The bilateral CTC will meet in Vancouver, BC to work on CTC assignments and complete the 2018 CLB&ER report.

Status of Technical or Annual Reports:

The 2017 C&E report is complete. The 2017 CLB&ER report will be completed in 2018 and the 2018 C&E and 2018 CLB&ER reports will be completed in 2018.

Comments:

The CTC has no additional comments at this time.

Agenda Item 5.a. – Fall Meeting
DRAFT Instructions re: Forecast Methodology review: revisit CTC feasibility report (as per
February 2017 decision)
October 24, 2017

To: Canadian Commissioners
From: U.S. Commissioners
Re: Potential addition to the 2017/2018 CTC Work Plan responsive to the Forecast methodology review and CTC feasibility report

At the PSC Fall Meeting, the Commission considered the CTC's feasibility report titled, "Review of PSC expert panel report on forecasting." The U.S. Section proposes the following additions to the CTC work plan for the purpose furthering implementation of certain recommendations contained in the aforementioned report.

- Develop an agency forecast documentation template that includes the following information:
 1. Information regarding the long term accuracy and precision of the forecast
 2. Information regarding factors associated with the uncertainty specific to the current year's forecast.
 3. Include a description of the existing CTC requirements for agency forecasts.

If accepted, work on this assignment would be placed at a lower priority than items on the draft CTC work plan.

Fall Meeting Agenda – Agenda Item 9
U.S. proposed instructions to Panels and Committees
October 24, 2017

To: Panels and Committees

From: PSC Commissioners

Subject: Instructions – Work Plan Specificity Regarding Proposed Meetings

In review of the 2017/2018 work plans, the Commission has noted a number of instances where the level of specificity provided regarding proposed meetings is inadequate for the Parties to develop accurate cost estimates and assess associated budget implications.

When submitting future work plans, please specify the number of days, dates and location of proposed meetings. Further, where proposed meetings would not include the full attendance of a Panel or Committee, please specify the number of attendees anticipated. This is the type of information that the Parties rely on for budget and meeting planning purposes.

For the 2017/2018 work plans, please follow up in the near term with the additional information requested for the below meetings:

Transboundary Technical Committee - Late Winter Projects Planning Management Meeting

Location - TBD (specify location)

Date - February 2018 (specify dates, number of days, and number of attendees if less than full Committee is expected to attend)

Technical Committee on Data Sharing -

Location - Portland, OR

Date - February 2018 (specify dates, number of days, and number of attendees if less than full Committee is expected to attend)

Fraser River Panel Technical Committee

1 day

Location - TBD (specify location)

Date - March 2018 (specify dates and number of attendees if less than full Committee is expected to attend)

Coho Working Group; Panel chairs and select members

Location - TBD (possibly Arlington, WA - please confirm location)

Date - March 2018 (specify dates, number of days, and number of attendees invited to attend)

Fraser River Panel Technical Committee

2 day

Location - TBD (specify location)

Date - April 2018 (specify dates and number of attendees if less than full Committee is expected to attend)

Working Group on Data Standards

Location - Vancouver, BC

Date - April 2018 (specify dates, number of days, and number of attendees if less than full Working Group is expected to attend)

Fraser River Panel - Pre-Season Planning

4 days

Location – TBD (specify location)

Date - April 2018 (specify dates and number of attendees if less than full Panel is expected to attend)

(Fraser) - Technical Modeling Meeting

2 day

Location - Vancouver, BC

Date - May 2018 (specify dates and number of attendees if less than full Committee is expected to attend)

Coho Technical Committee Meeting

Location - Seattle, WA

Date - May 2018 (specify dates, number of days, and number of attendees if less than full Committee is expected to attend)

Chum Technical Committee Meeting

Location - TBD (specify location)

Date - May 2017 (specify dates, number of days, and number of attendees if less than full Committee is expected to attend)

Fraser River Panel Technical Committee

Location - TBD (specify location)

Date - June 2018 (specify dates, number of days, and number of attendees if less than full Committee is expected to attend)

Fraser River Panel - Pre-Season Planning

4 days

Location - TBD (specify location)

Date - June 2018 (specify dates and number of attendees if less than full Panel is expected to attend)

Coho Working Group

Location - Bellingham, WA

Date - July 2018 (specify dates, number of days, and number of attendees if less than full Working Group is expected to attend)

SFEC-AWG & Coho Technical Committee

Location - Seattle, WA

Date - September 2018 (specify dates, number of days, and number of attendees if less than full Working Group and Committee are expected to attend)

PACIFIC SALMON COMMISSION ROSTER

Slate of Officers for 2017/2018

<u>OFFICE</u>	<u>COUNTRY</u>	<u>REPRESENTATIVE</u>
Commission Chair	U.S.	Bob Turner
Commission Vice-Chair	Can	Rebecca Reid
Fraser River Panel Chair	U.S.	Kirt Hughes
Fraser River Panel Vice-Chair	Can	Jennifer Nener
Northern Panel Chair	U.S.	Lowell Fair
Northern Panel Vice-Chair	Can.	Mel Kotyk
Southern Panel Chair	U.S.	Laurie Peterson
Southern Panel Vice-Chair	Can.	Andrew Thomson
Transboundary Panel Chair	U.S.	John H. Clark
Transboundary Panel Vice-Chair	Can.	Steve Gotch
Stan. Comm. on F&A - Chair	U.S.	W. Ron Allen
Stan. Comm. on F&A - Vice-Chair	Can.	Bonnie Antcliffe
Stan. Comm. on Scientific Cooperation - Chair	U.S.	Alex Wertheimer
Stan. Comm. on Scientific Cooperation - Vice-Chair	Can.	Carmel Lowe
Technical Committee on Data Sharing - Co-Chair	U.S.	George Nandor
Technical Committee on Data Sharing - Co-Chair	Can.	Kathryn Fraser
Fraser River Panel Technical Committee - Co-Chair	U.S.	Robert Conrad
Fraser River Panel Technical Committee - Co-Chair	Can.	Jamie Scroggie
Northern Boundary Technical Committee - Co-Chair	U.S.	Bo Meredith
Northern Boundary Technical Committee - Co-Chair	Can.	Steve Cox-Rogers
Transboundary Technical Committee - Co-Chair	U.S.	Ed Jones
Transboundary Technical Committee - Co-Chair	Can.	Bill Waugh
Enhancement Subcommittee of the Transboundary Technical Committee - Co-Chair	U.S.	Garold Pryor
Enhancement Subcommittee of the Transboundary Technical Committee - Co-Chair	Can.	Corino Salomi
Joint Technical Committee on Chinook - Co-Chair	U.S.	John Carlile
Joint Technical Committee on Chinook - Co-Chair	Can.	Gayle Brown
Joint Technical Committee on Coho - Co-Chair	U.S.	Gary Morishima
Joint Technical Committee on Coho - Co-Chair	Can.	John Holmes
Joint Technical Committee on Chum - Co-Chair	U.S.	Bill Parton
Joint Technical Committee on Chum - Co-Chair	Can.	Pieter Van Will
Selective Fishery Evaluation Committee - Co-Chair	U.S.	To be determined
Selective Fishery Evaluation Committee - Co-Chair	Can.	Rob Houtman
Joint Chinook Interface Group - Co-Chair	U.S.	Charlie Swanton
Joint Chinook Interface Group - Co-Chair	Can	Paul Sprout