

# Improving Fraser River Test Fisheries and Run Size Estimates: Workshop #1 Summary

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**Prepared for:** PSC Fraser River Panel

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## 1 Introduction

This report provides a brief summary of the first of two workshops on reviewing the Fraser River Test Fisheries program.

### 1.1 Background

The Pacific Salmon Commission, or its predecessor the International Pacific Salmon Fisheries Commission, has operated test fisheries to obtain data required to inform bilateral decisions of the Fraser River Panel since the 1960s. The information gathered from these test fisheries is regularly used in conjunction with information from the in-river hydro-acoustics programs to provide estimates of timing and in-season run size of Fraser River sockeye salmon management units.

The Fraser River Panel and Pacific Salmon Commission are undertaking a review of test fisheries to identify opportunities for refining the test fishing program in a way that ensures it can provide high quality information, minimize costs, and minimize fish mortality. As part of this study, two workshops are being held to gather technical input from scientists, decision makers, First Nations/Tribes, and stakeholders from both Canada and the United States.

The primary drivers for the overall review are a need to ensure:

- Best possible assessment programs that can be supported with available budgets;
- Adequate discussion of program elements because the program is extremely costly and there is currently no secure source of funds to pay for them;
- High-level suggestions that have come forward about alternate opportunities for collecting data (e.g. other fisheries, alternate technologies) are identified and discussed; and
- Overall assessment program is reviewed given that a review of the hydro-acoustics program currently underway.

### 1.2 Purpose and Scope of the Review

The purpose of this review is to identify opportunities for refining/improving the test fishery program to ensure it provides high quality information to inform the Fraser River Panel in making decisions regarding management of Fraser River sockeye and pink salmon, while minimizing costs.

The scope of this review includes:

- A technical evaluation;
- All Fraser Panel-related test fisheries in freshwater and marine environments and within Canadian and US waters;
- Criteria for comparing strengths/limitations; and
- A consideration of new alternatives for collecting key information, including alternate technologies

The scope of this review does not include:

- A review of administrative arrangements for test fisheries
- A review of cost structure/arrangements between the two countries

### **1.3 Workshop Objectives and Process**

A 2-day workshop was held in Vancouver, British Columbia on November 2, and 3, 2016. The workshop agenda is provided in Appendix A. It was attended by 31 participants (see Appendix B) representing a broad cross-section of interests (e.g., Canada and US, technical and policy, fishery sector and regulators, First Nations/Tribal and non-aboriginal). The objectives of the first workshop were to:

1. Develop a common understanding of existing test fisheries (TFs) in a way that helps identify strengths / limitations with the current program;
2. Review performance criteria for comparing strengths and limitations of test fishery options;
3. Identify options for test fisheries / data that could augment the information currently being collected; and
4. Gather input on next steps to further evaluate these options after the workshop.

Day 1 of the workshop focused on developing a common understanding about the current test fishery program and its strengths/limitations (see Sections 2, 3, and 4 below). Participants were split into sub-groups on Day 2 and tasked with generating test fishery alternatives under different salmon abundance scenarios that were seen as addressing the strengths/limitations identified on Day 1. Discussions from Day 1 and 2 were then used as the basis for identifying priority activities to undertake in the next steps of the review and technical evaluation of the current test fishery program (see Sections 5 and 6 below).

The workshop agenda and task process were developed during the late summer and early fall in consultation with a planning team representing a subset of the Fraser River Panel. We developed several additional components to support the workshop. These components included an evaluation framework, which included a draft set of considerations for comparing the strengths and limitations of different test fishery options. We also compiled background information from the PSC on existing and historic test fisheries (including a high-level snapshot, detailed summaries, and maps of test fishing locations). Lastly, we created a template for describing alternative test fishery options that participants could use to consistently provide their input prior to the workshop.

Several weeks in advance of the workshop participants were given the opportunity to use this template to submit potential alternative test fisheries that they wanted to be considered as part of the workshop deliberations. In support of this exercise, an additional conference call was held to answer questions about the template. Within this template, participants were also asked to answer three questions regarding the major strengths and weaknesses of the existing program and share their concerns about potential modifications.

## 2 Background on Test Fisheries

To ensure all participants had a common understanding of the structure and function of the existing test fishery program (i.e., workshop objective #1), Mike Lapointe (PSC) delivered a background presentation to address the following questions:

- How are current test fisheries operating? Key changes from past operations? Why?
- What are the key decisions and critical information needs?
- What are the past/future scenarios under which test fisheries need to operate? What are the key factors that discriminate these scenarios?
- What test fishery strategies are used to address these scenarios?
- What does a strong / ideal test fishery look like?
- What are the strengths / limitations in the current program? Why?

Additional background information on existing and historic test fisheries was also distributed to workshop participants prior to the workshop.

## 3 Perspectives of Participants

Two strategies were used to understand the breadth of concerns of participants at early stages of the engagement process. As noted above, participants were provided an opportunity to respond to three questions about their perception of the strengths and weaknesses of the existing program and concerns about potential modifications prior to the workshop. In addition, the workshop began with a round-table discussion where each participant was asked to share their major hopes and/or concerns about the possibility of modifying the current test fishery program. Based on input provided through these different approaches, a summary of the perspectives of participants on the review and the test fishery program is provided below.

*What are your hopes for or concerns with the possibility of modifying the current test fishery program?*

### **Need to change...**

- Respond to changing objectives for the management system
- Modify timing/location of test fishing to reflect environmental conditions and local observations
- Compile the results of harvests from all sources into the analyses to provide more timely results from the marine run size model

- Explore increased opportunities for FSC involvement (existing capacity, timely data)

**No concerns as long as...**

- Changes and data are accepted in a timely manner
- Info would not preclude U.S. from harvesting Sockeye and Pink TAC in Area 7/7a
- There is no significant reduction in the ability to assess the components of Fraser sockeye and pink returns

**Need for rigorous evaluation and scrutiny of any new alternative**

- Existing data and methods have undergone significant R&D - any alternatives would need to undergo similar scrutiny
- Could be long transition period (operating old and new) to evaluate new TFs
- Ensure valid evaluation of the strengths and the weaknesses of existing test fisheries before modifying

**Elements that should be maintained**

- Everyday presence of the test fisheries; do not sacrifice current programs
- Mission hydro-acoustic estimates extremely important in understanding catchability
- Maintain capacity for test fishing

**Concerns about the process of making decisions about potential modifications to program**

- Transparency and consultations outside this process
- Basing decisions on fiscal constraints rather than scientific evaluations of impacts
- Considering wholesale changes prior to renegotiating Chapter 4
- Making changes that suit harvester groups rather than Treaty objectives
- Don't want process to drag on for years

**Decrease in quality of information**

- Increase in variability of the information relevant to informing marine fisheries
- Impacting information needed to manage domestic fisheries in Canada
- Need to have good data – do not compromise on this

**Financial concerns**

- Promoted changes will increase cost
- Test fishers need to make enough money to make participation worthwhile
- Focus on cost may preclude consideration of progressive, beneficial ideas

**Erosion of test fishery program**

- Need to define “current”. If 2016 program is new baseline, further reductions could jeopardize entire program.
- Cannot go backward from where it is now – lowest possible point and can't be made worse

**Previous efforts started well but test fishing aspect lost focus (e.g., focus on Food Fish / commercial harvest)****Scale of TF needs to align with scale of management**

- Current program generally meets current management needs; but management changing, with potential divergence of scales
- Solution needs to be manageable to apply in-season

## 4 Strengths and Limitations of Current Test Fisheries

To provide a structures and systematic way of evaluating any test fishery alternatives that were brought forward at the workshop, the facilitators worked with the planning group in advance of the workshop to develop an evaluation framework and set of performance criteria against which any new test fishery alternatives could be compared. These performance criteria included the following considerations:

1. **Value of the information**
  - a. Type of information
  - b. Timing of information
  - c. Quality of information
  - d. Relevance of information to Fraser River Panel management decisions
2. **Financial**
  - a. Cost to implement
  - b. Revenue from sample fish
3. **Fish mortality**
  - a. Target species
  - b. Non-target species

These criteria were reviewed and discussed with the workshop participants. In addition, participants were asked to provide their open-ended views on the strengths and/or limitations of the current test fishery program.

The following two sections provide a summary of the main strengths and weaknesses of the existing TF program, as identified by workshop participants through both the pre-workshop survey and discussions at the workshop. It was important to understand the strengths of the current program to identify what is important to keep, as well as understand the limitations in the current program to identify what might need to be adjusted.

### 4.1 Strengths

- Critical information for decision making
- Long time series over which some extremes have been observed
- Multiple years of data from different areas
- Consistency in program (in skippers, boats, gear, etc)
- Provides opportunity to experiment with alternative technologies
- Good coverage of migration pattern (in general)
- Areas 12 and 13 as independent estimators
- Round Island and San Juan test fisheries
- Good communication of in-season information
- Recent improvements in estimates at Mission

- Panel able to identify weak runs in a timely way
- Provides timely information

#### 4.2 Limitations or Gaps

- Lacking an evaluation of the value of information
- Implementation costs
- Spatial coverage
- Need for geographic expansion north of Port Hardy
- Consideration of tides and weather
- Timeliness/better early warning (mismatch in timing and precision between data obtained from marine TF and information obtained from Mission)
- Minimal use of FSC
- Additional TF sites upriver
- High variation in catchability (within year and across years)
- Challenges dealing with in-season uncertainty around data and management systems
- Dealing with late run holding
- Mismatch between in-season and post season estimates
- Gillnet 4B, more offshore

### 5 Test-Fishery Portfolios

For Day 2, participants were divided into five subgroups to work on developing a “portfolio”<sup>1</sup> of test fisheries under three different scenarios of salmon abundance:

1. High abundance sockeye, non-pink year (e.g., 2014 cycle)
2. Moderate abundance sockeye, pink year (e.g., 2013 and 2015 cycles)
3. Low abundance sockeye, non-pink year (e.g., 2016 cycle)

Participants were asked to consider different salmon abundance scenarios, because it was recognized that test fishery needs are likely to vary significantly across these scenarios. All five groups were asked to develop a test fishery portfolio for Scenario 2. Afterwards each sub-group was then asked to develop a portfolio for one of the other scenarios. For each scenario, the groups were asked firstly to consider how they would modify the existing TF program (without adding new TFs) and secondly to identify potential substitutions and/or new TFs to add to the existing program. To assist with deliberations, each of the sub-groups was provided with graphs of daily abundance by management group and the corresponding test fishing schedule across the season for each scenario, maps of TF locations, a summary of the various options raised during the workshop (see Appendix C), and a summary of the perceived strengths and weaknesses of the existing program identified by participants.

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<sup>1</sup> A test fishery “portfolio” was defined as the full combination of individual test fisheries that would need to be operated in a given year to meet assessment and decision making needs.

A summary of the key discussion points from the sub-groups as related to the different abundance scenarios is provided in Sections 5.1, 5.2, and 5.3. After sub-groups had reported out on their individual discussions, participants were asked to reflect on the emerging and common themes that were raised across sub-groups and scenarios. Section 5.4 summarizes some of the themes that emerged from this discussion.

Each of the groups developed their potential portfolios independently. These were reported back to the group but there was no exercise of reconciling differences and developing a commonly supported hybrid of the ideas put forward. The sections below represent the input from all the groups. Where groups had similar ideas, those have been consolidated but there are also conflicting ideas. To aid the reader, ideas that are mutually incompatible are identified in *purple italics*.

## 5.1 Scenario #1: High Abundance Sockeye (no pink salmon)

### Overall

- Keep TFs going
- Delay start of TFs to protect Early Stuart
- Need to trust/accept the data that is received

### Marine TFs

- Area 12 Round Island – leave alone
- Area 12 Naka Cr – 3 days prior to commercial opening
- Area 12 PS – leave alone
  - Flexibility to Area 12 Seine location in addition to standard set especially if lack consistency between area 12 + 13 data
- Area 13 PS – leave alone
- Gulf Troll – possible removal (with substitution)
  
- Area 20 PS & GN – leave alone
  - Add 2nd purse seine boat closer to Area 19 line to validate Area 20
- Area 4B/5 – 3days prior to commercial opening
- Area 7 RN – 3days prior to commercial opening

### In-river

- Cottonwood – leave alone
- Whonnock – leave alone (for species ID)
- Qualark – leave alone (if Qualark hydro-acoustics is continued)

### Suggestions for potential substitutions and/or additions

- Initiate Gordon Group TF
- Utilize CPUE in seine ITQ
- US CPUE info could be helpful
- Utilize FSC data PS & GN
- Flexibility to add test fisheries in 4B/5/6C/6

- Move Area 12 GN (Round Island) to Naka Creek
- Replace Area 12 GN with Roller Bay GN
- Replace Naka Creek with TF seaward of Area 12 (Roller Bay, Cape Caution, Gordon Group)
- New – in-river TF above Hell’s Gate
- New – Area 2W troll TF

## 5.2 Scenario #2: Moderate Abundance Sockeye (plus pink salmon)

### Overall

- Delay start of TFs to decrease cost and protect Early Stuart and Early Summers
- Need to trust/accept the data
- Shift to intensify TF effort to whenever it’s most appropriate for Sockeye and pink runs to maximize precision as run builds, then reduce TF effort once peak is confirmed

### Marine TFs

- A12 & A20 – same as Scenario 3
- Naka Creek – expand dates IF we think we want this to replace A12, otherwise drop TF
- A13 – evaluate potential for stock ID for Pinks (not needed for Sockeye estimates)
- *A12 & A13 - increase effort in order to reduce estimate variability in Sockeye and Pink (A13)*
- *Alternatively – alternate 2 boats in Area 12 PS; just 1 boat in Area 13 PS*
- A29 Gulf Troll – drop TF (see substitute)
  
- Area 20 – 1 GN boat
- Area 4B/5 & Reef Net – 3-5 days in advance of scheduled openings

### In-river

- *Cottonwood*
  - *Drop TF (see Scenario 3) - expect higher sample size at Whonnock with greater abundance therefore there is less need for Cottonwood*
  - *Alternatively - if sample size can be maintained then continue Cottonwood*
- Whonnock – longer duration to cover Pink migration (may be relatively minor extension in some years)
- Qualark – defer to hydroacoustic review

### Suggestions for potential substitutions and/or additions

- Consider “full fleet TF” to assess pinks – would need sockeye TAC.
- Small Area B fishery for Pink assessment with Sockeye TAC
- Deploy vessel for systematic observation when in doubt
- Consider deploying something like Area E TFs (assessment fishery) to increase sample sizes used for stock identification.
- Early Seaward assessment – Gordon Group starting with ESum timing.
  - Gordon Group (seine) instead of Cottonwood



- Add – Cape Mudge sonar
- A29 Gulf Troll - mobile sonar surveys, on both marine approaches
- Small intense fishery opening to assess “standing stock” in gulf
- US CPUE and/or Cdn ITQ CPUE -- look at data & usefulness in assessing Pink and Sockeye abundance

### 5.3 Scenario #3: Low Abundance Sockeye (no pink salmon)

#### **Overall**

- Later start and earlier finish to save money and fish
  - Based on pre-season forecasts, adjusted to anticipate return.
- Consider extending GN in low abundance years and delaying start of seines

#### **Marine TFs**

- Could probably drop A20, A12 & A13 PS TF in years when we are really certain that we’re not expecting any Chilko SK (i.e., not expecting any international TAC)
- Adjust A12/A20 TFs based on diversion rate (except for Chilko scenario)
  - If Northern Diversion is high, maintain A12 and end A20 early (and vice versa) at the end of the run or few days after peak (only for SK years)
- Use full suite of fisheries
- 3rd wk July to 3rd week Aug (Marine TF) - with reduced timeframe, with ability to shut down fisheries early.

#### **Northern approach**

- *A12 GN – no change and/or potentially flexible end dates*
  - *Alternatively – drop Naka Creek GN (not used for run size estimate)*
- Area 12/13 PS – leave start date alone, flexible ending data if passed peak in abundances
  - *Need A13 PS even in reduced program years, to corroborate A12*
  - *Alternatively – don’t need A13 PS in low abundance years (e.g., not run in 2016)*
- A29 Gulf Troll – remove –not needed/ can’t use data in low abundance years

#### **Southern Approach**

- A20 GN
  - start late in low Early Stuart years
  - start date moved 10 days later to July 10
  - reduce to 1 boat
- Area 20 PS
  - same as Area 12 justification (start date as scheduled, flexible and date)
- US southern approach TFs
  - 4B/5/6C – don’t need in low abundance years
  - Run only one of A4B, A5 or Reef Net
  - take 4B/5 off the water – C&S gives est. prior to commercial opening

- A7 RN – open a few days prior to potential US fishery – if no US TAC, no TF (not used for abundance)
- *Alternatively – no refinement to Southern approach recommended*

### **In-river**

- Look at potential redundancy among in-river TFs (Cottonwood/Whonnock/Albion)
  - Look for opportunities to amalgamate
- Whonnock
  - Leave alone for Mission species ID
  - Is there any way to increase sample size?
- Drop Cottonwood – explore extra sets at Whonnock & explore use of data & fish from Albion.
- Qualark
  - Leave alone if Qualark hydro-acoustics operating
  - Dependent on hydro-acoustics review – probably drop in low abundance years
- *Alternatively – no refinement to in-river test fisheries recommended*

### **Suggestions for potential substitutions and/or additions**

- Move Area 12 GN to Naka Creek
- Naka Creek GN modification – Initial FSC opening in A12, then Naka Creek TF, then A13 GN FSC
  
- Sonar – Area 13 (e.g., Cape Mudge)
- Add – Roller Bay GN
- Add – Gordon Group – GN? PS?
- Add – C&S
  
- When conflicting information from FSC fisheries & Area 12 test fishing, either:
  - Flexibility to move Area 12 PS boat to Area 13, or
  - Add another Area 13 boat
- Use FSC data
  - Include FSC PS & GN data from Area 13/ Johnstone Strait (whether or not fishing Area 13 TF boat)
  - A13 Seine & Gillnet – use FSC data
  - Cottonwood Gillnet – use FSC fisheries for stock ID
  
- Whonnock – Hybrid Albion TF in place of Whonnock, depending on Mission status
- New – In-river TF above Hell's Gate

## **5.4 Common Themes Across Scenarios**

### **Commonalities especially relevant to medium/high abundance years**

- More seaward indicators
- Exploring use of sonar

- Elimination of Cottonwood
- Naka Creek – current implementation is not helpful – expand or move or eliminate
- Potential move away from Round Island
  - Roller Bay – earlier timing, more seaward
  - Naka Creek – more representative information geographically (narrower geographic constraint)
- Above certain abundance, commercial fleet is in water – do you really need TFs then?

**Commonalities especially relevant to low abundance years**

- Flexibility in timing of TFs – e.g., delayed start, early termination
- Drop varying non-assessment fisheries
- Use C&S fisheries in US Area 4, 5

There was general acceptance that a less intense program is needed during lower abundance years, but there was a hope that a more intensive (than current) program could be conducted during high abundance years. The varying assessment programs in relation to abundance level was related to two main factors: (1) management need (e.g. fewer fisheries, especially in marine areas, in years of low abundance), (2) availability of data from alternate sources (e.g. more commercial fisheries on high abundance years). The group identified few differences in the test fisheries program to differentiate between years with high abundance sockeye (e.g. 2018) and moderate abundance sockeye plus pink (e.g., 2017 & 2019).

## 6 Critical Needs for Further Evaluation

Near the conclusion of the workshop, participants were asked to reflect on the test fishery portfolios and commonalities that emerged from the sub-group portfolio discussions. Based on these commonalities and the emerging themes, participants were asked to provide suggestions on the next steps and critical technical needs that would provide a stronger technical basis for identifying and evaluating adjustments to the current test fishery program. A summary of these critical needs is provided below. Based on these needs, participants were then asked to propose technical activities that could be undertaken by the project team (ESSA, PSC staff, and others) in the next 6 months to address these needs (summarized in Table 1).

### Critical Needs

1. Need for more seaward, more timely, information relative to where catch allocations are.
2. Need for better integration of commercial (and other) information, but recognitions that commercial data and data from other sources is not consistently available and is not typically collected in a manner that is consistent with test fishery info. For instance, there may be an opportunity to develop a management system that isn't so dependent on test fishery data (i.e., a system where it's easier to open commercial fisheries and use them as part of your assessment tool box).
3. Desire to minimize apparent discrepancies of test fishery vs. other information.
4. Recognition of need for improvement and concerns about “knee jerk” reaction with overemphasis on costs

5. Recognition of cyclic nature of abundance in returns across years and desire to buffer impacts of low years with greater test fish harvests in abundant years.
6. Concern expressed about how Conservation, Test fishery and FSC needs interact
7. Desire to better integrate environmental data
8. How do we improve the way we both quantify and promote the value of information from the test fisheries? E.g., quantify implications of not having certain elements on potential foregone harvest opportunities.

## **7 After the First Workshop**

Subsequent to this workshop, a subset of the planning group was convened to further prioritize the activities in Table 1 based on their feasibility to complete in the next few months and the value of information that would be provided to the Fraser River Panel. Priority activities were then submitted in a year 2 proposal to the Southern Endowment Fund to request resources that would be used to undertake a subset of these activities. If funded, a second workshop would be convened in May 2017 to review the findings from these activities and help inform decisions on next steps by the Fraser River Panel.

**Table 1. Priority areas for further review and evaluation that emerged from the workshop (in no order of importance). The four right-hand columns represent a classification of the broad types of activities included within each area**

	New Analyses of Existing Data	New Data	Documenting Historic Analyses and Data	Data Management Strategy
<b>Priority Areas for Further Review and Evaluation</b>				
1. <b>Developing decision rules and/or heuristics to guide pre-season and in-season deployment of test fisheries under different scenarios and conditions</b> a. How to better deploy what TF you have (e.g., decision flow for portfolios and scenarios) b. Different scenarios could include: salmon abundance, TAC, species, confidence in abundance estimates, timing relative to peak abundance)			X	
2. <b>Reviewing existing test fisheries to better understand their relative value and non-Panel uses and benefits</b> a. Review of existing TFs – relative value; different uses b. What are the other uses and benefits c. Should those be part of Panel TFs or other			X	
3. <b>Developing a strategy for systematically managing other sources of information and data relevant to in-season fisheries management</b> a. e.g., ITQ, FSC fisheries, etc.	X		X	X
4. <b>Improving timeliness of in-season information and use of data from fisheries more seaward than current configuration</b> a. Compile and review existing studies/memos b. Compile info/data and analyze it c. Existing seaward CPUE and relationship to Fraser CPUE	X		X	X
5. <b>Evaluating alternative configurations of test fisheries in Johnstone Strait</b> a. Explore and analyze potential redundancies among test fisheries b. e.g., replacing Round Island with Naka Creek plus new TF	X		X	
6. <b>Evaluating representativeness of purse seine test fisheries in Areas 12 and 13</b> a. Too broad, need to narrow analysis for particular question – what are trying to achieve? b. Resample TF data (internal) OR set-by-set ITQ (external) c. How to supplement existing with others	X		X	
7. <b>Reviewing and refining the current suite of in-river test fisheries</b> a. Data mining, explore possibilities to reduce from 3 in-river TFs to 2 b. Cottonwood data – long history, stock ID c. Alternate platforms for stock ID (Albion – mesh size) d. Comparison of samples	X		X	
8. <b>Evaluating the feasibility of alternative technologies for estimating in-season abundance in the marine environment</b> a. e.g. side-scanning sonar b. Marine supplement to Mission hydro-acoustics (e.g., SEF proposal)	X	X		
9. <b>Improving the understanding of holding patterns of late-run sockeye and pink salmon in the Strait of Georgia</b> a. Radio-tagging in Gulf, working UBC/SFU b. Scott Hinch - ocean telemetry work/acoustic (big cost)	X	X		

## Appendix A: Workshop Agenda

### PSC Fraser River Panel

## Improving Fraser River Test Fisheries and Run Size Estimates: Workshop 1



### Workshop Agenda

November 2-3, 2016

Fisheries and Oceans Canada  
#200 - 401 Burrard Street, Vancouver BC  
<https://goo.gl/maps/F9LDG61B1ts>

### Project Leads:

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### Workshop Facilitators:

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### Project Background and Goal:

The Pacific Salmon Commission, or its predecessor the International Pacific Salmon Fisheries Commission, has operated test fisheries to obtain data required to inform bilateral decisions of the Fraser River Panel since the 1960s. The information gathered from these test fisheries is regularly used in conjunction with information from the in-river hydro-acoustics programs to provide estimates of timing and in-season run size of Fraser River sockeye salmon management units.

**The Fraser River Panel and Pacific Salmon Commission are undertaking a review of test fisheries to identify opportunities for refining the test fishing program in a way that ensures it can provide high quality information, minimize costs, and minimize fish mortality.** As part of this study, two workshops are being held to gather technical input from scientists, decision makers, First Nations/Tribes, and stakeholders from both Canada and the United States. This workshop marks the first of these two meetings.

**Pre-Workshop Reading and Homework:**

- Evaluation framework for comparing strengths and limitations of test fishery options
- Background information on existing and historic test fisheries (overview and detailed summaries, map of test fishing locations)
- Template for describing alternative test fishery option(s) to consider

**Workshop Objectives:**

- (1) To develop a common understanding of existing test fisheries in a way that helps identify strengths / limitations with the current program;
- (2) To review performance criteria for comparing strengths and limitations of test fishery options;
- (3) To identify options for test fisheries / data that could augment the information currently being collected; and
- (4) To gather input on next steps to further evaluate these options after the workshop.

**Day 1**

<b>Approx time</b>	<b>Topic</b>	<b>Contributors</b>
8:00	Arrival – <i>Participants will need to allow some time to sign in with commissioners on 2<sup>nd</sup> floor</i>	
8:30	<b>Welcome and introductions</b>	Panel chairs, participant introductions
8:45	<b>Overview of agenda</b>	ESSA
9:00	<b>Context and scope of this review</b>	Project leads
9:30	<b>Perspectives of participants about this review</b>	ESSA facilitating, participants contributing
10:30	Break	
10:50	<b>Background on test fisheries</b>	PSC presenting, questions from participants
12:00	Lunch (provided)	
1:00	<b>Strengths / limitations of current test fisheries</b>	ESSA facilitating, participants contributing
2:00	<b>Evaluation framework</b>	ESSA facilitation, questions from participants
2:40	Break	
3:00	<b>Options under consideration</b>	ESSA facilitation, participants contributing
4:15	<b>Recap of Day 1</b>	ESSA summary
4:30	Adjourn	

**Day 2**

<b>Approx time</b>	<b>Topic</b>	<b>Contributors</b>
8:00	Arrival	
8:30	<b>Overview of agenda</b>	ESSA
8:40	<b>Options under consideration (continued)</b>	ESSA facilitation, participants contributing
10:00	Break	
10:20	<b>Sub-group discussion on test fishery portfolio</b>	Sub-group work, supported by ESSA facilitation
11:30	<b>Sub-group check in</b>	Sub-group reporting out
12:00	Lunch (provided)	
1:00	<b>Sub-group discussion on test fishery portfolio (continued)</b>	Sub-group work, supported by ESSA facilitation
2:30	Break	
3:00	<b>Sub-group reporting back</b>	Sub-group reporting out
4:00	<b>Recap, next steps, and closing remarks</b>	ESSA summary, panel chairs
4:30	Adjourn	



## Appendix B: List of Workshop Participants

<b>Participant</b>	<b>Affiliation</b>
Aaron Dufault	FRPTC
Ann-Marie Huang	FRPTC (Technical Committee)
Bob Conrad	FRPTC
Bob Kehoe	FRP (US industry)
Brendan Connors	ESSA (observer)
Brent McCallum	FRP(Canada recreational)
Brian Assu	PSC Commissioner
Carmen McConnell	DFO
Catherine Michielsens	Pacific Salmon Commission
Chris Ashton	FRP (Canada Purse Seine)
Chris Cue	Canada Industry
Jack Giard	FRP (US reefnet)
James Dixon	FRP (NOAA)
Jamie Scroggie	FRPTC
Jennifer Nener	FRP (Chair, DFO)
John Field	PSC (observer)
Keith Forrest	Pacific Salmon Commission
Kelsey Campbell	Observer
Kirt Hughes	FRP (WDFW)
Les Jantz	FRP (DFO)
Les Rombough	FRP (Canada Gillnet)
Lorraine Loomis	FRP (Vice Chair, US Treaty Tribes)
Marcel Shepert	FRP (Canada First Nations)
Mike Griswold	FRP (Canada troll)
Mike Hawkshaw	DFO
Mike Lapointe	Pacific Salmon Commission
Mike Staley	FRPTC
Peggy Mundy	FRP, NOAA Federal
Pieter Van Will	DFO
Ron Goruk	FRPTC
Tiffany Petersen	Makah Tribe
Alex Hall	ESSA (facilitator)
Marc Nelitz	ESSA (facilitator)

## **Appendix C: Participant Suggestions and Test Fishery Options to Consider from Pre-Workshop Survey and Workshop Discussions**

These suggestions come from workshop participants both through pre-workshop input and workshop discussions. The pre-workshop input was predominantly drawn from survey responses about perceived weaknesses with the existing TF program and/or concerns about potentially modifying it, rather than being explicit proposals for alternative TFs options. However, the concepts from the two alternative TFs that were submitted using the template are also incorporated below.

### **Early qualitative indicators (seaward of marine fisheries)**

- Early warning test fishery (e.g., QCI troll)
- Add more seaward TFs
- Data from northern/Alaska fisheries

### **Improved quantitative indicators**

- Adaptability/flexibility to do test fishing outside prescribed pattern
- Test fishery on US side of outer Strait of Juan de Fuca
- Use A13 FSC (or other) fisheries for info on migration behaviour
- Greater utilization of FSC fisheries data
- Test fishery above Thompson River (in some years)
- Provide a minimum TAC every year to allow assessment fisheries
- Add an independent TF near the Area 20 purse seine
- Increase the sets/day in northern/southern purse seine TFs
- Other openings to augment data
  - Better estimate of abundance earlier?
  - Improves daily abundance not total abundance
- Area D 10-boat assessment fishery in 2000s
- Assessment fisheries (i.e., commercial) need to occur every year (regardless of how small) to augment test fishing data
- Use catch [?] from Cdn ITQ purse seine fishery in abundance modeling
- Use FSC catch in abundance model (timely catch reporting)
- Need to find a way for First Nations [?] to use FSC fish as part of assessment [?]
  - Need to have a First Nations liaison function to be able to coordinate between FN communities and PSC
- Develop well managed, systematic FSC test fisheries
  - Reduced mortality through transfer of test catch to FSC, potential reduced cost

**Alternate technologies / hydro-acoustic supplement to Mission**

- Hydro-acoustic monitoring in Johnstone Strait
- Incorporate juvenile PIT-tagging for few key systems
- Fish finder technologies? Surveys? Combined with sampling (e.g., D. Levy's work 30 years ago)

**Data analysis strategies**

- Gaming with alternative TF scenarios
- Marine tracking of migration (i.e., from seaward fisheries)

**Other**

- Reduce or stop TFs that are only collecting qualitative information
- Tag fish and assess harvest – tool to inform stock assessment