Mr. Paul Ryall
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Fisheries Management Branch
Fisheries and Oceans Canada, Pacific Region

January 19, 2004

Dear Paul:

Re: Fraser Sockeye Escapement Initiative: Workshop Four

Thank you for providing us with the opportunity to attend the fourth Fraser Sockeye Escapement Workshop, and to provide you with our comments and questions.

In general, the modelling work seems to be progressing well, but it has a long way to go. We understand that the model objectives must necessarily be described in terms of the values that the model calculates (values related to catch and escapement). Nevertheless, we feel more attention should be paid to the relationships between the model's objective function and optimum solution, and other values, such as marine and terrestrial ecosystem functioning, that the MCC maintains must be defined objectives in the management of Fraser sockeye. Although it may not be possible to directly address our concerns with the model as it is currently designed, we do expect to see other values of Fraser sockeye clearly set out as defined objectives. We also expect a full exploration of how the values set in the model for objective parameters like S_{low} and catch, and the penalty weights applied to these values in the objective function, affect the optimum solution found in the model runs, and how these optimum solutions affect values for sockeye salmon beyond the conventional fisheries management context. We are eager to understand how DFO proposes to use the model to consider alternative goals and strategies and perhaps most importantly, how DFO intends to seek public input into the management objectives for Fraser sockeye set in the real world. We are looking for clearly defined objectives, and a transparent planning and management process along with public involvement and accountability.

It may be an understatement to call this modelling process complex. The computational, analytical and statistical work is state-of-the-art, yet supporting it all is a rather flimsy understanding of the factors that have controlled the population dynamics of Fraser sockeye salmon over the period for which we have data. The MCC recognizes the imperative to 'do something' in 2004, as well as the need to seek improvements in our long-term management of Fraser sockeye, but we also feel it is critical that we realistically evaluate the impacts of uncertainty in these plans, and ensure that we manage in a precautionary and risk-averse way. This can only happen if we are all clear about

what we know, what we don't know, and what we are assuming to be true in the development of goals and strategies for managing Fraser sockeye.

We also question how the development of "long term" Fraser sockeye management plans can be undertaken without the guidance of a Wild Salmon Policy. We continue to be concerned with the long delay in the development of this Policy and the inability of the Department to meet the previous minister's commitment to have this Policy in place by the end of last year. A Wild Salmon Policy, clearly outlining the Department's commitment to conservation, must be used as a fundamental foundation for this process.

We urge DFO to look not just at addressing the needs of First Nations and the narrowly-defined interests of stakeholders, but to consider also what is in the best interests of the fish, coastal ecosystems, and the people of Canada. Salmon have intrinsic value beyond being a source of food, wealth, or even enjoyment. We need to evaluate the full benefits of the different management schemes under consideration – harvest, allowing given levels of escapement, or allowing potentially healthier salmon populations and coastal ecosystems, to name a few – against the full cost of factors such as management, or lower escapement values. In managing this Crown-owned resource DFO must expand their consideration of economic and social benefits provided by these fish, and this fishery. Only full cost accounting at the very broadest possible scale will allow the Canadian public to hold DFO accountable for the management of the public interest in Fraser sockeye.

At this point in the process we have only looked at a few selected examples, and have not really explored the important relationships in the model. What do these attributes or objectives really measure, and how are the optimum solutions arrived at by the model affected by the objective values and weighting factors chosen? We have no idea if "avoiding low escapements" as narrowly defined in this model really captures the broad suite of conservation objectives we're trying to promote, nor do we understand how different penalty weights change the optimum solutions that the model finds. There are also a number of very important biological questions that are unanswered (cyclic dominance and the behaviour of salmon stocks approaching extinction, to name only two).

We also have several questions/comments arising directly from the workshop:

1. There are some serious limitations in the Ricker curve/MSY view of the world, particularly assumptions about "stationarity" and inherent stability (do we have data to indicate time trends or cycles in productivity? Should we be thinking about alternative models that don't make these assumptions i.e. time series models)? Given that this is an attempt to describe an historical relationship (and in many cases a very weak relationship), it doesn't necessarily follow that assuming Ricker stock dynamics is the best approach. We have to do something, but setting numerical minimum escapement goals on a stock by stock basis still has some merit, and escapement goals could be varied by run size, we might also set fixed exploitation rates or vary exploitation rates by run size range.

2. How sensitive is the model to alternative values of S_{low} and the associated penalty weights? How do values of S_{low} relate to average escapement by stock and the likely performance of First Nations fisheries? What are the ecological benefits or risks (i.e. how can we explore the role of large escapements in promoting ecosystem health and increasing long-term productivity)?

3. How do we put a value on learning something useful about stock dynamics and biology i.e. regarding cyclic dominance, or the values of large escapement, particularly over the longer term?

4. Should we consider setting a penalty for reaching or exceeding S_{msy} in the value function?

5. How will we decide about cyclic/non-cyclic issues? Could it be that some large stocks are inherently or biologically cyclic and others appear to be cyclic in response to our harvest patterns on co-migrating cyclic stocks (i.e. could some stocks be biologically cyclic and other stocks only appear cyclic due to being fished cyclically)?

6. Stable catch, maximum catch, and avoiding low catch are proxies for some benefit stream. But how does our model consider the management costs and risks associated with harvesting these catches in an uncertain environment? We want to attempt to deal with the costs and benefits in a full cost accounting from the perspective of the Canadian citizen. It seems obvious that if we want to maximize the benefit stream, we must do so recognizing that different strategies are associated with different costs as well as different catches. Perhaps management costs, related social costs (employment insurance costs, failure to meet First Nations needs etc.) and risks to individual stocks vary depending on the harvest strategy and need to be considered in this analysis, particularly if maximizing or stabilizing catches at some level are to be our goals.

7. Each of these stock aggregates is comprised of many stocks. What are the advantages and disadvantages of explicitly considering and managing more stock groups?

8. In considering the optimum harvest strategies, how could we model the effects of taking some harvest in terminal areas? As the model is now configured, the fish not harvested in a mixed stock fishery become spawning escapement (or natural mortality), but we also have the option of moving harvest of more productive stocks to areas where weaker stocks are not present (and where any natural or en-route mortality can be assessed and accounted for). We don't simply have to forego the catch. Can we deal with each stock separately and set an exploitation rate on the aggregate being fished, based on the expected return of the weakest stock (achieving MSY for the weakest managed stock in the aggregate)? This

would allow us to explore the merits and costs of 'weak stock management' coupled with terminal harvest opportunities for stronger stocks.

9. How will we make the tradeoffs between different aggregates fished together? If catch is our driver how do we avoid fishing down small stocks or aggregates towards S_{low} in order to reap the benefits of large stocks (e.g. early summers vs. summers).

10. How do we deal with serious conservation concerns (i.e. Cultus) and the constraints these stocks will put on our management flexibility? If we want to harvest summers, we have to start earlier, and that will put pressure on early summers.

We would appreciate answers to these questions and concerns. Once again, thank you for the opportunity to attend this workshop and provide our comments. We look forward to continuing with this process over the coming weeks and months, and in all likelihood, years.

Sincerely,

Ken Wilson Suzanne Tank
Representatives, Pacific Marine Conservation Caucus, salmon sub-committee

Craig Orr Vicky Husband
Co-Chairs, Pacific Marine Conservation Caucus

MCC Salmon Sub-committee organizations:

David Suzuki Foundation
Raincoast Conservation Society
Sierra Club of Canada, BC Chapter
Watershed Watch Salmon Society

Cc: Paul Macgillivray, Acting Director General, Pacific Coast