



October 1, 2012

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Dear Kim:

Thank you for the opportunity to review the recent River Herring Climate Workshop Report. I have attached my comments to this letter.

Best wishes,



General Comments

This report summarizes information on the biology of river herring and relationships between the environment and various aspects of their biology (e.g., physiology, behavior) as presented by various scientific experts during a 2-day workshop. The self-stated goal of the report is to “[focus] primarily on the information presented, discussed and/or provided (including information provided before or after the workshop) which assist [*sic*] in answering questions related to possible impacts of climate change on river herring.” I see 2 shortcomings with the current format.

First, if the ultimate goal is to provide supporting information for a status review, I would suggest the various hypotheses could have been laid out, in advance, based on first principles rather than forming several ad hoc hypotheses after the fact. For example, something like “Changes in freshwater hydrology (precipitation & flows) will affect reproduction” would seem appropriate. Then, various pieces of evidence from speakers, literature, etc. (either for or against) could be lumped underneath them (e.g., changes in flows will alter migration timing). This is the approach used in a recent report on declines in Fraser River sockeye salmon¹. As it stands now, the actual hypotheses are not discussed until the very end, and several are not well distinguished. For example, it seems to me that hypothesis #2 is too broad to be useful, and that #5 is simply a subset of #2. Hypothesis #3 is so specific that I can’t see how a range shift, if documented, could be ascribed solely to climate change. Hypothesis #7 is also too vague—it only seems logical that “ocean acidification *could* impact river herring more than other sources of acidification” (i.e., it’s also possible they won’t).

Second, the information is presented largely as transcribed notes from the various presentations, which makes it very difficult for a reader to summarize all of the key aspects and determine whether, in fact, the report “include[s] and cite[s] the best scientific and commercial information available on the species and/or climate science to assess potential impacts.” I would suggest summarizing all of the similar data/information by subject in tables similar to that on page 9, and instead including the actual notes as some sort of appendix material.

I appreciate this may be a draft report, but I also found the writing full of spelling and grammatical errors (bullet points aside) that I hope will be corrected before the report is fully released.

Specific Comments

P 32-37. The various comments here are difficult to digest, and would be much more useful if summarized into some smaller number of salient ideas that capture the bigger picture.

P 38-39. The first column in Table 4 is labeled “Physiological effects due to climate change”, but none of the things listed in that column are actually physiological effects. They simply describe changes in the environment whereas a “physiological effect” should be the actual response of the fish. For example, if the first column says “Longer, dryer periods”, then I think you need a 2nd column that relates that to another habitat response like “decreased summer flows & warmer

¹ See <http://www.psc.org/pubs/FraserSockeyeDeclineWorkshopLinks.pdf>

water temperature”, and then the 3rd column with the physiological response might be something like “increased metabolism”.

P 45, last bullet. I don’t understand how, according to Hare and Nye, “ocean acidification in freshwater streams is possible” (i.e., it’s called ocean acidification because it happens in the ocean).

P 46-49. This section on data gaps is actually a ragged mixture of both data gaps and suggestions for other/additional analyses, many of which could be combined under fewer topics, For example, things like “historical level of the population” and “habitat use” are data gaps. On the other hand, “linking river runs to water temperature” and “use GIS to develop high resolution elevation models” are analyses based on data.

P 49. The bullet points at the bottom of the page don’t logically following the text preceding them.

P 51. I would suggest presenting the info described here in a more meaningful manner (e.g., tables), which would help highlight the various data gaps by location, , habitat, life stage, etc.

End of review.