



National Oceanic and Atmospheric Administration
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F/NWC1

August 18, 2008

MEMORANDUM

TO: Rob Walton, Salmon Recovery Division, NMFS Northwest Region

FROM: Michael Ford, Conservation Biology Division 

SUBJECT: Comparison of viability criteria among Technical Recovery Teams

In 2006 and 2007, the NWFSC received funding from the NMFS Northwest Regional Office to conduct a quantitative comparison of the Technical Recovery Teams' viability criteria for ESA-listed Pacific salmon and steelhead. We expected such a comparison to be useful for future updates to the viability criteria, and also for helping new technical teams, such as the TRT for Puget Sound steelhead, think about their own approaches to developing viability criteria.

There are two primary aspects to this project: 1) a detailed description of the similarities and differences among the criteria developed by the various TRTs, and 2) a quantitative comparison of the 'risk level' associated with the various criteria. Dr. Shallin Busch, a National Research Council post-doctoral associate hired to work on this project, has completed step (1) above, and I am forwarding the result as two attachments to this memo: a) a report describing the results with a series of flow charts that graphically illustrate the various criteria and b) a spreadsheet with a detailed point-by-point comparison of the criteria.

Dr. Busch has also made significant progress on step (2) above, the quantitative comparison of the criteria. In particular, she has conducted a 'common garden' experiment by applying each of the population viability models used by the TRTs to a common set of data from all recovery domains with available time series. She recently presented these results at the Western Division of the American Fisheries Society meeting in Portland, and is the process of writing them up for publication in a scientific journal. We will share this manuscript with you and your staff as soon as it is complete. In addition, Dr. Busch is currently working on a series of computer simulations that will provide additional insight into the causes of variation among the various population models. We expect these results to be available later this year.

In evaluating the differences in viability criteria among the TRTs, it is important to understand that there was no *a priori* expectation that the criteria would be identical. Indeed, the entire approach that NMFS has taken toward salmon recovery planning has been to tailor recovery plans to local conditions. The TRTs operated from a common set of biological principals described in the “Viable Salmonid Population” tech memo ([McElhany et al. 2000](#)), but they worked semi-independently from each other and developed criteria suitable to the species and conditions found in their specific recovery domains. Some of the TRTs also worked with local policy groups that had their own ideas and input about TRT priorities. Because of this largely local approach to developing recovery plans, it would be surprising if the TRTs all developed identical recovery criteria.

One of the original motivations for this project was to determine if there were large differences in the degree of risk associated with viability criteria for each TRT. The 'common garden' and simulation studies currently underway start to address this question for the abundance and productivity criteria. However, because all of the criteria have qualitative as well as quantitative aspects, it is difficult to develop a fully quantitative comparison of the relative degree of risk associated with the different criteria. In considering this issue, it also worth noting that the variance in risk level among the Pacific salmon criteria is probably small compared to variance among all recovery criteria for ESA listed species as a whole.

If you have questions regarding this project, please do not hesitate to contact Mary Ruckelshaus, Paul McElhany, or myself.