

MEMORANDUM

January 6, 2003

To: Lee Hillwig
United States Department of the Interior
Fish and Wildlife Service

From: Independent Economic Analysis Board (IEAB)
Northwest Power Planning Council

Subject: Review Comments on Artificial Production Review - Phase I

Thank you for the thoughtful and detailed review of the IEAB's Artificial Production Review - Economic Analysis Phase I. Overall, your review supports the conclusion of the Phase I study: in order to provide effective analysis of the Artificial Production Program in the Columbia Basin, we need overall program objectives as well as individual project objectives that are measurable. In order to conduct analyses of the costs as well as benefits of existing programs, we also need standardized data systems, marking and monitoring programs, and effective evaluation tools. We conclude that there is a commitment to restore and maintain the salmon resource in the Pacific Northwest. We also conclude that there is an interest in investing in this resource in a cost-effective manner.

Our main objective in the Phase I report was to establish a preliminary basis for assessing the cost effectiveness for artificial production projects proposed to the Council. Overall, we found that the cost data for such an analysis were reasonably available upon request.

We concluded that "the remaining gap concerns performance measures for restoration or supplementation hatcheries, which aim to boost the rebuilding rate for naturally spawning fish stocks that have underutilized spawning habitat. We would need to consult further with the APAC and hatchery managers in order to establish appropriate performance criteria for such projects. ... We propose that the Council consider a Phase II of this analysis which would (a) incorporate a wider range of projects in order to support a statistical analysis, (b) develop an effectiveness measure for restoration hatcheries, and (c) provide some application of the resulting cost-effectiveness assessment to specific NPPC sponsored projects."

We reached these conclusions with some understanding of the historical context of these projects. Also, some members of the IEAB are very familiar with the management objectives of these resources. We are also aware of the public interest in the subject of assessing the cost effectiveness of producing salmon at publicly funded hatcheries. (See Oregon Secretary of State - Audit Report, "Department of Fish and Wildlife: Hatchery Cost Effectiveness - State Fiscal Years 1994-1997" available through the Internet at Audits.Hotline@state.or.us and <http://www.sos.state.or.us/audits/audithp.htm>.)

The above are some general observations. The following are some reactions to your more detailed review. We do not mean to get into a "point/counterpoint" exercise. However, there are some important points made in your review that we would like to address.

- We do object to the points made in the end of the second paragraph (bottom of page 1 and carrying over to page 2) concerning the IEAB's understanding of analytical techniques, the need for agreement from co-managers regarding such analytical techniques, and the release of the Phase I document. First, the IEAB is an independent board, which offers advice to the Council separate from any recommendations that would normally be expected from program co-managers. When conducting reviews of studies or programs, we have not sought agreement from any outside parties, especially those who have a direct economic interest in the program or study, regarding the "appropriate techniques of analysis". We have, however, sought input where we found it appropriate to help our understanding of both the facts and possible analytical techniques, before our independent analysis is conducted. It would seriously compromise both the purpose and the independence of the Board if we needed agreement from affected parties regarding analytical techniques. Second, the IEAB conducts all of its deliberations in public sessions. We have no control over the release of reports of our discussions that are observed by third parties.
- Page 2, second paragraph. The base period chosen is a point of discussion throughout the review. We chose the most recent period because of the availability of data. We noted that these 12 to 15 years were characterized by poor survival. We would welcome a recommendation from the Fish and Wildlife Service for another analytical period, if data are available. The relevant question from our perspective is: what period for analysis should be chosen that will help make decisions about the future? Alternatively, would a range of alternative survival rates substitute for missing hard data?
- Page 2, third paragraph. The reason we are trying to assess the cost effectiveness of hatcheries is that these measures may also be used to compare to other means of producing salmon, i.e. restoring spawning and rearing habitat, etc. However, current planning requirements are not the only reason that hatchery costs vary, both over time and across projects. A more complete analysis would identify the various sources of costs. A better understanding of how costs are related to, for

example, objectives, location, and age might help identify opportunities for more cost-effective actions.

- Page 3. There seems to be a misunderstanding of the differences between cost-effectiveness and cost/benefit analysis. In cost-effectiveness analysis, we take as given the benefits of mitigating for dam construction, for example, and then assess the costs of reaching that objective by alternative means. In a full cost/benefit analysis, both the costs and the benefits would be analyzed. We agree that the costs of hatcheries should be compared with the costs of other methods of returning fish.

To bring in the other values such as electricity, aquaculture, etc. into this analysis is beyond the scope of the IEAB task in our Phase I study, although the IEAB has been engaged in reviews of broader comparative analysis (e.g., the Snake River drawdown studies). Again, we feel the main purpose of the Phase I report was to establish some methods to enable the Council to compare costs between and among hatchery programs, and perhaps also among other potential production and enhancement programs.

- Page 3. The IEAB did not attempt to develop databases for hatchery assessment programs. We used a wide variety of existing data sources for this analysis. It is the job of the agencies that fund and manage production and enhancement programs to improve the data available. To fault the IEAB for the lack of data is not appropriate. However, we may be able to help construct a structure for data collection that would facilitate future analyses of hatchery cost-effectiveness. Such a data structure would include the following:
 - Definition of production (e.g., fish released, fish surviving to adult)
 - Costs of construction and operations, including fish marking costs
 - Monitoring of releases and returns
 - Evaluation of data

The objective would be to routinely monitor the costs of culturing, releasing, and getting contributing adult fish to either harvests or spawning stocks. We agree that all sources of data should be identified, and will work to make sure that future studies provide full citations.

- Page 4, second paragraph, seems to imply that hatcheries are the only means of mitigation. This may not be correct. If the objective is to have a certain amount of adults return, hatcheries are one way to meet these mitigation objectives. If they do not succeed, are there other ways to reach these objectives?
- Page 4, paragraph 3 and Page 6 paragraph 6. We all agree that the ability of augmentation and mitigation hatcheries to return fish for harvest depends upon the spatial/temporal patterns of fishery openings permitted by the harvest management authorities. Delivering fish to a time/place in which they cannot

reasonably be harvested is not just the “fault of the facility”, but is the result of a number of interacting factors. Still, a facility whose fish cannot be caught, for any valid reason, is going to be rated as not cost-effective at enhancing the salmon fishery. The hatchery placement, species selection, and release timing may be part of the problem.

- Page 8. Several remarks are aimed at comparing older facilities with newer facilities. We acknowledge that this is a problem and we would encourage more discussion on how to compare facilities across a long time frame. It is also important to keep in mind that, if new facilities are much more expensive for external reasons (planning costs, NEPA review, water quality issues), the additional costs are real and will necessarily make those facilities look less cost effective than augmentation, mitigation, or restoration options that have not increased in cost to the same extent. This is not a mistake in analytical approach, but a reality.
- Page 8 & 9. The problem of estimating terminal area harvest (including inferences from CWT recoveries and from harvest estimates) is acknowledged. We had to make specific assumptions in each case, based upon available data on fish returns and harvests. For example, the Dworshak steelhead survival rate was assumed for the Leavenworth program at the suggestion of the hatchery manager. Better and more comprehensive accounting for the adult fish production from hatcheries would certainly facilitate both the biological and cost-effectiveness evaluation of the programs.
- Page 9. From the remarks on this page, it is apparent that what is needed are measurable objectives for each hatchery project. At the same time, data needs to be made available whereby these objectives may be analyzed. A real cost of producing salmon in hatcheries should include marking costs, monitoring costs, and evaluation costs, in addition to the kinds of costs that normally come to mind.

Again, thank you for your detailed review. It is important that further discussion take place on the means to analyze these programs with the mutual goal of attaining the maximum return for the funds spent through the Council’s Fish and Wildlife Program.

cc. Mark Walker, Director, Public Affairs Division, Northwest Power Planning Council