



Independent Scientific Review Panel

for the Northwest Power and Conservation Council
851 SW 6th Avenue, Suite 1100
Portland, Oregon 97204
isrp@nwcouncil.org

MEMORANDUM

November 17, 2003

TO: Mark Fritsch, Fish Production Coordinator, Northwest Power Planning Council

FROM: Brian Riddell, Rick Williams, and Nancy Huntly, ISRP

SUBJECT: Follow-up to the ISRP Step Two Review of the Northeast Oregon Hatchery (NEOH) Spring Chinook Master Plan (2003-12)

Introduction

Per the Council's request, the ISRP provides this memo to summarize its findings regarding the NEOH Core Team's October 16, 2003 response to the ISRP's comments and questions raised in the Step 2 Review of the NEOH Spring Chinook Master Plan (ISRP 2003-12, August 12, 2003). The ISRP recommendations and comments in this memo are informed by an October 27, 2003 meeting between the NEOH Core Team, Council staff, and the ISRP review team.

The NEOH Core Team's response was its third regarding issues that were identified by the ISRP as requiring further explanation or clarification during their initial review (July 2000) of the NEOH Master Plan. The response addressed issues regarding the monitoring and evaluation plan (#1), the genetic breeding plan (#3), and harvest framework, forecasting, and escapement goals (#5). The remaining issues (2, 4, 6, 7, 8, and 9) did not require further response given the nature of the ISRP comments and assessment by NPCC staff that the issues have been adequately addressed (September 29, 2003 Mark Fritsch email).

Recommendation

As discussed at the meeting, the ISRP finds that the NEOH Core Team response adequately addressed the ISRP concerns related to the genetic breeding plan (#3), and the harvest framework, forecasting, and escapement goals (#5). However, the NEOH submittals-to-date do not constitute a complete monitoring and evaluation plan that provides adequate detail to allow for a technical review.

Comments

Specific ISRP comments on issues #3, #5, and #1, and the NEOH response in general are provided below to document key points raised in the discussion and offer general guidance on the development of a stand-alone monitoring and evaluation plan.

ISSUE 3: Genetic Breeding Plans:

The ISRP found that the NEOH Core Team response adequately addressed the ISRP concerns related to the genetic breeding plan (#3). The response was a significant clarification, and the ISRP had no further questions on the breeding protocols.

Minor questions, such as the status of the ultrasound method (p. 16), were resolved during the meeting. Rich Carmichael noted that the NEOH team is developing the ultrasound method so they can determine fish maturity earlier and more precisely than the current method of observing fish for signs of sexual maturity. More precise information will allow the NEOH team to better time when to move the fish out of salt water. The NEOH approach looks like it will be helpful.

Clarification was also provided for alternative breeding designs (p. 20). The ISRP suggested that the NEOH team consider establishing multiple breeding lines within the hatchery to provide a buffer in case of unforeseen events. These lines could be crossbred to provide continuance of the brood stock and provide a tool for reducing inbreeding effects, if they become a production issue.

ISSUE 5: Harvest Framework, Forecasting and Escapement Goals:

The NEOH Core Team response adequately addressed the ISRP's initial concern with treatment of aging errors in the forecast. The ISRP noted that the error rate is hard to get around, so the NEOH team needs to consider setting a buffer in the harvest rate. To do this, the NEOH team would need an estimate of the uncertainty, which would allow them to determine the confidence level desired to identify a buffer. The NEOH team agreed and stated they would incorporate the buffer concept into the process this year.

ISSUE 1: Monitoring and Evaluation Plan:

1. Adequacy of Current Efforts

As state above, the NEOH Core Team's M&E plan submittals-to-date do not constitute a complete plan. The current plan lacks the detail necessary to conduct a level of scientific review expected of the ISRP. As an example, if one of their monitoring methods stated using binomial sampling to determine sample sizes for age structures, the ISRP would note that this is a multinomial sampling question. Binomial sampling would substantially underestimate the sample sizes needed for a specific level of precision.

The October meeting discussions made it clear that the NEOH team believes they have most of the pieces in place or under development to create a comprehensive monitoring and evaluation plan, but description of those pieces is dispersed in Fish and Wildlife Program proposals, Lower Snake River Compensation Program descriptions, and NEOH Three Step Review submittals. The comprehensive monitoring and evaluation needed to meet this Step 2 review should describe

clearly the experimental and sampling designs of the overall monitoring and evaluation program and make clear that all the pieces fit together to provide long-term guidance for implementation, monitoring, and evaluation of the NEOH program. It should also make clear what the priority monitoring metrics are and how these will be integrated with specific analyses to result in useful outcomes evaluation. It should make clear that the needed core data can be gathered with the techniques, funding, and personnel that are available or can be committed to the program.

2. Appendix A as Basis for an M&E Plan

As noted above, in its current state, Appendix A does not form the needed comprehensive Monitoring and Evaluation Plan for the NEOH program, but it could serve as the basis for such a plan. A stand-alone M&E plan is needed, rather than one that is constituted by a set of pieces, which were developed as part of the iterative Step process. The plan needs to be cohesive and contain a level of detail adequate to guide implementation over the years regardless of the coming and going of staff.

Jay Hesse, NEOH Core Team member, noted that Table 1 in Appendix A contained a listing of the performance standards for the NEOH projects to inform management actions at various spatial scales. The table also provides details about the NEOH monitoring effort and relationships between projects. The ISRP noted this and felt that narrative portions of the suggested M&E plan could profitably expand the information in Table 1.

The NEOH team needs to focus clearly on developing the core, essential components of their M&E plan. There is no need to explain non-essential ongoing projects in detail. In other words, it may be useful to the NEOH team to focus on core M&E questions or objectives and to eliminate distracting references to activities that are not essential to their core M&E needs.

Appendix A already identifies the objectives of the needed M&E plan through a series of management questions. The questions aren't ranked, but most are emphasized in many forums in the region. For example, the list in Table 1 and the logic described in Appendix A track well with the performance indicators in the ISAB's Supplementation Report. The M&E Plan should also rank management questions and objectives by priority. The decision process that leads to the priority rankings needs to be presented.

3. Levels of Precision and scale of Data Collections

The NEOH team needs to set a standard of precision for use in developing the M&E Plan and to state where they can meet it and where they can't. They need to consider the confidence level necessary to meet objectives (e.g., 80-90% confidence may suffice). The 95% confidence intervals and levels commonly used in statistics may not be necessary or achievable for all of the NEOH purposes.

4. Supplementation and the NEOH Projects

At the meeting, the NEOH team stated that this project is not intended to answer whether supplementation projects can support sustaining natural populations. The ISRP was concerned with this statement. The ISAB/ISRP consider the ISS, NEOH, and Yakima programs among the most important studies in the Columbia River Basin specifically funded to test the efficacy of supplementation.

Consequently, a decision not to pursue answering the bigger question on supplementation with this project is a significant decision, and a departure from the ISRP's understanding of one of the primary reasons for funding the suite of NEOH projects at their current level of support. Failure to address the efficacy and limitations of supplementation within these related projects would be an opportunity lost.

5. Genetic Tracking

Tracking demographic and genetic attributes of wild and hatchery components in the suite of NEOH projects will be important in understanding population responses and evaluating the effects of the various projects. Apparently, NOAA Fisheries is working cooperatively with the NEOH program on providing genetic work in Catherine Creek, and the Grande Ronde, Imnaha, and Lostine rivers. These ongoing activities and future genetic studies that provide information on wild and hatchery interactions should be clearly described in the overall M&E plan.

6. Hatchery Production Needs

The NEOH M&E plan should include the documentation from the pre-Step 2 submittal that describes the necessary level of production needed to meet the objectives of the M&E plan. Matching production needs with production opportunities (i.e., numbers of returning broodstock) will guard against last minute changes that compromise the experimental design of planned projects.

7. Suggested Components in the M&E Plan

The comprehensive plan should describe:

- **Goals and objectives**
- **Stocks and geography**
- **Experimental design**, including both sampling layout and intensity, and specific planned statistical analyses.
- **Critical parameters**
- **Sampling procedures** - is the sampling adequate to meet the objectives? What are the costs of different levels of statistical power?
- **Data management**
- **Program coverage and assessment** – how are the projects meeting the plan, do you need more, is there redundancy?
- **BiOp and systemwide uncertainties** - how does the NEOH fit into the big picture of testing supplementation and better describing how hatchery and wild fish interact?

- **Costs.** Include in the table of ongoing and needed projects the costs currently and potentially accruing. The NEOH team identified \$750,000 as projected new costs for needed M&E elements -- juvenile abundance and adult monitoring -- that are currently lacking.

Much of the specifics of the monitoring and evaluation plan could be done in a tabular form, as in Table 1 in Appendix A. The NEOH team can go down the line items and highlight the level of priority for each item. As noted earlier, the Table needs to be augmented with text that includes summary statements on how the various elements fit together to address the uncertainties.

8. *Additional Considerations*

- Reference and control streams – without references or controls the NEOH team will have very limited ability to interpret effects of their programs. They need reference stream monitoring for stock status, as well as inference to hatchery input. They plan to monitor juvenile migration and adult escapement in the Minam and Wenaha. The ISRP suggested that they should closely examine the overall objective to determine if the juvenile monitoring is necessary (i.e., could it be sufficient to monitor adult returns with a level of rigor useful for comparison with the treatment streams using counting weirs?). Determining this requires local knowledge.
- Probabilistic Sampling – the NEOH team plans to do this in some areas and not others. They should elaborate in their monitoring and evaluation plan what specifically they plan to do and why. This is an essential step of experimental design and it strongly constrains the inference that can be made from the data gathered. The rationale for the sampling design, and the correspondence of the design to the specific objectives of the program, must be clearly articulated in the plan.
- Sampling protocols – the NEOH presently relies on redd counts and fences at a few locations already for sampling. There is a need for verification of the sampling methods, including estimation of error rates.
- Peer review – the NEOH will continue to pursue peer review. Continuing review and input by well-qualified independent professionals that have direct experience in monitoring and evaluation, particularly that of fishes, should be a required step of M&E plan development and implementation.
- Annual and five-year reports – the description of the NEOH team’s approach looked good. The ISRP emphasized the need to continue and follow through with yearly analyses and to make both data and results widely available to interested parties

While the ISRP noted that its tasks need to be defined and requested by the Council, the ISRP agreed to preview an outline or draft M&E plan before extensive writing was invested in preparation of the final proposed plan. Emphasis in this next phase should be directed to collating a single integrated plan, documenting general methods and data to be collected, and explaining clearly how these data would be used as an evaluation of the NEOH program.

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