

Dear Brian,

You requested that FPAC review the ISRP/ISAB tagging Report and provide comments on this document. The following is a compilation of the technical comments provided by several different FPAC members. Some FPAC members provided comments relative to each question the ISAB addressed, while others provided more general comments. Therefore, we will present the comments accordingly.

The tagging report presents a good summary of existing tagging technology and its use throughout the Basin, as well as the limitations of the various technologies. The ISRP/ISAB also provides their recommendations on how the tagging technology could be improved to provide better information in the future. This document provides a good reference of the current tagging methods used in the Columbia basin as well as emerging methods.

The management recommendations of the report were sometimes quite general, which may be due to the broad nature of some of the questions. Comments provided by some FPAC members on the responses to the questions follow.

- **Can the coordination fish tagging projects and programs, both within and outside the program, be improved?** Such a broad question begs a general response – there is always room for improvement. Perhaps a better question may have been to request the ISAB to design, or to review the design of a comprehensive tagging program that would provide the research, management, or monitoring needs for the Columbia River basin. In the absence of a comprehensive program individual tagging programs exist which are tailored to address specific research or management needs. The current “need based” tagging program may not be an optimal use of resources, but it provides the information needed by each manager or researcher to provide the information required to base a decision. The report provides the attributes of a successfully coordinated program and provides a critique on how well the data produced by the various programs are currently coordinating their efforts which is quite helpful. The recommendations for improving the coordination of the programs were reasonable, but the case for a real need to implement these recommendations to address any glaring shortcoming was not made.
- **Can the compatibility between the results of different tagging studies be increased?** Once again, a broad question received a general answer – there is always room for improvement. They correctly noted that no single tag technology can answer all questions and better integration and discussion of information produced from individual studies would help inform management decisions. The recommendations to increase compatibility between results are good.
- **How can the Council, through its Fish and Wildlife Program, best encourage the development and use of innovative tagging technologies relevant to program RM&E needs?** Both the response to this question and the recommendations provided to encourage innovative technologies were excellent. The recommendations section provided good suggestions of development needs for each tag technology and the need to cautiously use data due to “tag effects” and to recognize the potential that the tagged fish

may not accurately represent the targeted population. This section may have benefited by providing clear guidance on the valid use of existing tag technologies and their ability to address research needs and provide valid data for both project and multiple project reaches. For example, is a specific tag valid for project survival or reach survival, and what is the minimum size fish that this tag could be used on? Information of this nature was spread throughout the document, but a succinct summary would have strengthened the document. Another way to address the issue of valid tag use is for the researcher to clearly state the limitations of the technology and tag effects on the study fish and how those effects may influence the results.

- **What gaps exist in the Basin’s capacity to collect life history information at the project or program scale because of lack of relevant technology?** The response to this question was well stated: size limitations for tags, “potential for tag effects”, lack of tributary monitoring, and no feasible way to track lamprey ammocoetes. The recommendations were quite thorough as well, which included: 100% marking of hatchery fish; the need and risks of tagging wild fish; the need to estimate adult straying; the need to tag lamprey; the need to know why PIT tags produce lower SARs than run reconstructed wild unmarked Chinook salmon estimates, the effects of surgically implanted tags on juvenile and adult salmon; the rate and extent of tag loss, and the need to develop PIT tag detectors to cover all routes of passage at hydro projects.
- **What are the criteria for determining the most cost-effective tagging technology during the project review process?** This question was not answered directly, but the response correctly noted that the project sponsor should be provided with the appropriate technology to effectively address the question or manage the program.
- **How can this element of the program be made more cost-effective?** The main recommendation was to have a comprehensive tagging/marking program for data collections in the Basin. We support the development of such a comprehensive baseline program but recognize that there will always be individual project needs that will require a more focused tagging program to address unique research and management issues. The report noted this recommendation was made in 2000 and has not been enacted. In its absence, better coordination was emphasized.

Comments provided by some FPAC members that fit into the category of general comments on the document

- The ISAB/ISRP provides lists the attributes of a successfully coordinated program and includes a significant discussion regarding the precision of data associated with tags and the applicability of results to sound management decisions. The report focused heavily on precision but also needs to emphasize that the selection of the appropriate technology is needed to accurately measure the response variable to make a sound management decision. We also believe the researchers should be required to provide an estimate of the tagging effects on adult returns and what population is being affected. The ISAB/ISRP recommendations establish networks and committees yet do not require researchers to

identify the limitations of the tagging methodology including tagging and handling effects. It should be mandatory for researchers to identify how tagging and handling effects might limit the application of their results to management decisions. The recommendation to coordinate CSS with other projects should be incumbent on all researchers. All research proposals should be required to coordinate and include a section describing such coordination.

- Several of the recommendations include establishing processes and committees. If these processes are truly needed then additional funding to support these committees should be provided.
- Any new tagging or innovative tagging technologies should be required to demonstrate and minimize the impact of the tag before large scale studies employing the tags are funded. Where practical, a proof of methods study should occur on unlisted populations.
- The ISAB/ISRP report specifically addresses the discrepancy between SAR estimates using PIT tags compared to SAR estimates using run reconstruction estimates. The ISAB report appears to assume that PIT tags are underestimating adult returns. However, the error could lie in adult reconstruction estimates or more likely a combination of errors in both methods. We support resolving this issue. Limitations of tagging methodologies directly affect cost effectiveness.
- The Tagging Report specifically recommends marking 100% of the hatchery production (Recommendation 4.1 page 13) “to facilitate hatchery broodstock management and evaluations of the impacts of hatchery straying on natural production.” The Tagging Report raises concern and potential conflict between 100% marking and mass-marking to enable mark-selective fisheries; “Support for tagging all hatchery fish should not be confused with support for mass-marking (adipose fin clipping) to enable mark-selective fisheries” (page 35). It is likely that some entities will incorrectly interpret “100% tagging/markings” as a need to “externally mark” 100% hatchery production. Alternative marking methods (thermal otolith marking) has the potential to improve our management ability and reduce uncertainties.