



## Independent Scientific Review Panel

for the Northwest Power & Conservation Council  
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**Memorandum (ISRP 2011-7)**

**March 3, 2011**

**To:** Bruce Measure, Chair, Northwest Power and Conservation Council

**From:** Eric Loudenslager, ISRP Chair

**Subject:** Review of proposed 2011 request to the Budget Oversight Group for the Hungry Horse Mitigation/Flathead Lake Project, #1991-019-01

### **Background**

On January 24, 2011, the Council asked the ISRP to review a submittal from the Confederated Salish and Kootenai Tribes (CSKT) to the Budget Oversight Group for Project #1991-019-01, *Hungry Horse Mitigation/Flathead Lake*. Following is a summary of the Tribes' request to the Budget Oversight Group:

#### **Request:**

The Confederated Salish and Kootenai Tribes (CSKT) have been building a program with non-BPA funding to reduce the numbers of non-native lake trout in Flathead Lake since the late 1990's. CSKT requested funding from BPA for this effort for the 2007-2009 project solicitation, but was not supported by the ISRP, who questioned whether the efforts were sufficient to achieve the goal. The CSKT feel that with some additional information gathered since 2006 this action has currently reached a stage of development that they now feel is even more timely and appropriate for BPA to participate, and are requesting to shift existing BPA funding starting with their FY2011 contract. This request is for BPA to begin funding about one third of the lake trout control program, specifically ~\$100,000 to support two fishing contests per year. Unlike the request in the 2007-2009 solicitation, the fishing contests will now be supplemented by additional control measures such as a seasonal bounty, gillnetting and/or trap-netting of lake trout.

This CSKT submittal is intended to address the condition placed on the project as part of a follow-up recommendation to the FY 2007-2009 review, regarding *“Conduct fishing contests for lake trout.”* Specifically, as part of the FY 2007-09 project selection process, the ISRP conducted four reviews related to the project (#1991-019-01) – see [ISRP 2007-7](#), June 20, 2007. The ISRP's recommendation covered a number of project objectives, but relevant to the review at hand is Objective 2 related to lake trout reduction through angling.

In 2007, the ISRP concluded that:

Objective 2 related to using angling to harvest lake trout in an effort to reduce lake trout impacts on westslope cutthroat and bull trout in Flathead Lake is rated *Does Not Meet Scientific Review Criteria*. The latest proposal still fails to acknowledge efforts to achieve similar objectives in other areas of the region. For example, the original proposal did not mention attempts to control lake trout in Yellowstone Lake and Lake Pend Oreille, which show how difficult (perhaps impossible) it is to reverse a lake trout invasion in systems with *Mysis*, and that harvest from recreational angling alone will not be adequate. The sponsors partially responded to the ISRP's request to develop the rationale that the ongoing effort to reduce lake trout numbers via the fishing derbies might overcome the compensatory ability of the surviving lake trout. Sponsors provided a modeling exercise that demonstrated that increased harvest could reduce the lake trout population. Unfortunately, the lake trout population has not been reduced by angling, and the angling efforts have not yet achieved a sufficient harvest. Further, the sponsor did not provide a rationale that this reduction would in turn provide a quantifiable increase in abundance of westslope cutthroat or bull trout...

The ISRP suggested that the lake trout monitoring might be justified if shown to be part of a long-term fisheries plan for Flathead Lake, and funding for the fishing derbies might be justified if linked to a larger lake trout removal effort. The sponsors did not respond to these suggestions. Consequently, Objective 1, the Flathead Lake fishery monitoring work elements is rated *Does Not Meet Scientific Review Criteria*.

The ISRP's 2011 review of the material submitted to BOG is provided below.

## **Recommendation and Summary Comments**

### *Does Not Meet Scientific Review Criteria*

The ISRP finds that the proponents' request to implement two fishing contests per year as part of their lake trout predator control program is not scientifically justified.

Overall, insufficient new scientific evidence is provided to indicate that the use of these contests will contribute to sufficient depletion of the lake trout population to where survival benefits will accrue to the bull trout, cutthroat trout, and other native species. The proponents stated that the contests "will now be supplemented by additional control measures such as seasonal bounty, gill-netting, and or trap netting of lake trout." However, in this response, they have not provided information indicating that they have initiated those measures or provided plans giving any details of such measures.

The proponents provided updated information on harvest during fishing contests (figure 1) indicating that harvest numbers have increased and that increased rewards and harvest are correlated (figure 2). It is not clear, however, whether the increased reward resulted in increased harvest or the other way around.

## Detailed Comments

The response provided by the proponents did not adequately address or provide specific additional information on any of the previous ISRP questions and concerns (which were identified by the proponents themselves in the response). For example, the CKST indicate they are communicating with programs at Yellowstone Lake and Lake Pend Oreille to gain from experiences there, but the important details of how the efforts in those other locations have informed and shaped the program at Flathead Lake are absent. Further, no information was provided on the population numbers and confidence intervals, nor any information provided from the work of Dr. Michael Hansen (evidently ongoing but not completed) on how many fish would have to be removed from this big lake to reduce lake trout recruitment (under different stock recruitment scenarios) to sufficiently benefit native species. A first step is to show that some specified depletion in numbers will result from actions. The next step is to show through modeling efforts and literature review that depletion in numbers will not result in a detrimental compensatory response (i.e., increased young-of-the-year lake trout recruitment). In a case of a compensatory response, the lake trout removals, if not severe enough, may merely *increase the rate of fish production* in lake trout and solve nothing in terms of improving conditions for native species. A further step is to have sufficient baseline population information on bull trout and cutthroat trout and a plan to be able to produce and document benefits to those species.

Before this proposal can be scientifically justified, the population and modeling results must be scientifically sound and clearly presented. The issues of density dependence/compensatory growth and survival noted above must also be clearly addressed. The proposed fishing contests must be shown to be effective in reducing not only numbers of lake trout but to have a strong probability to help native species. Although it is shown that more fish may be removed with more and larger contests or by adding gillnetting, trap netting, or a bounty fishery to the control measures, the effects of these increased harvests on lake trout stock dynamics are unclear. Removal efforts in Yellowstone Lake (a lake smaller than Flathead) have not been successful to date, despite a 15+ year effort, in part because of the same lack of information that the ISRP is requesting. After population estimates and modeling scenarios are completed, it may be necessary to implement a more defined plan for adequate reduction in lake trout numbers and managing native fish populations.

Additionally, the CSKT have not discussed the potential effects of lake trout control measures (i.e., fishing contests, gillnetting, trap netting, or bounty fisheries) on non-target native species in Flathead Lake, especially bull trout and westslope cutthroat trout. Delayed mortality from handling non-target species also needs to be examined so benefits of lake trout reductions are not off-set by incidental losses of native species.

The ISRP appreciates the difficult situation that the CSKT (and their co-managers) find themselves in. The biological and social challenges are significant. Stakeholders have conflicting goals and there appears to be a spirited debate among the Flathead Lake angling public as to the desirability of a truly strong reduction in lake trout numbers. As it has evolved over the years, the fishing contests (Mack Days derbies) may have impeded lake trout “control” rather than worked to successfully initiate it. Reasons for this are: (1) a vocal group of anglers have

taken advantage of the derbies to reap monetary rewards for their fishing and will not abandon that without a fight. For much of the Flathead community, lake trout are now legendary and the more big ones the better. And (2) Catch limits are 50 lake trout per day under 30" and 1 over 36." There is also a slot – 30"-36" – these fish are illegal to keep and are to be put back. This effectively returns many of the largest fish to the lake rather than remove them. Even if the derbies increased in size over the next 5 years or so to harvest 25% of the lake trout, that would not be nearly adequate to effectively reduce the population – probably twice that amount annually would be required. Under this situation, it is even more imperative that both a clear vision and a scientifically defended, convincing proposal for reduction be forwarded.

Much food web research has been conducted on the Flathead Lake ecosystem, with contributions by the project proponents (Ellis et al. 2011). Other useful literature and modeling approaches to inform the Flathead Lake fisheries management effort include *Ecopath*, Christensen in press; *Atlantis*, Fulton 2010; and [ISAB 2011-1](#), page 70.

## References

- Christensen, V. In press. *Ecopath with ecosim: linking fisheries and ecology*. Chapter 5, in Sven Erik, J., editor. *Handbook of ecological modeling, network and informatics*, CRC Press.
- Ellis, B.K. and 9 others. 2011. Long-term effects of a trophic cascade in a large lake system. *Proc. Natl. Acad. Sci. USA*. [www.pnas.org/cgi/doi/10.1073/pnas.1013006108](http://www.pnas.org/cgi/doi/10.1073/pnas.1013006108)
- Fulton, E. A. 2010. Approaches to end-to-end ecosystem models. *Journal of Marine Systems* 81:171-183.
- ISAB. 2011-1. *Columbia River Basin Food Webs: Developing a Broader Scientific Foundation for Fish and Wildlife Restoration*. 354pp. [www.nwcouncil.org/library/isab/2011-1/](http://www.nwcouncil.org/library/isab/2011-1/)