July 9, 2015

Memorandum -- delivered via email

To: Tammy Mackey and Rich Piaskowski, Portland District
US Army Corps of Engineers

SB

From: Stephanie Burchfield, Fisheries Biologist, Willamette Branch
West Coast Region, National Marine Fisheries Service (NMFS)

Subject: Request for comment on the Corps' Memorandum of Coordination for proposed changes to the adult trapping and transport protocol for spring Chinook salmon at the Cougar Dam trap in 2015.

The U.S. Army Corps of Engineers (Corps) emailed a Memorandum of Coordination to the region on June 25, 2015, requesting comments on the proposed change to the adult trapping and transport protocol for spring Chinook salmon at the Cougar Dam trap in 2015. Below are some general comments from the National Marine Fisheries Service (NMFS).

NMFS supports the proposed change in trapping operations for adult spring Chinook salmon at Cougar Dam in 2015. The Corps shall implement the protocols as described in the proposal for 2015. There are two primary reasons why the change in operations is needed for 2015: 1) to reduce the incidence of spring Chinook being placed above Cougar Dam that did not originate from there, and 2) lack of updated genetic pedigree study results. Below is further explanation of these concerns.

Returns of Chinook salmon to the fish collection facility at Cougar Dam are comprised of salmon produced from above Cougar Dam and salmon that originated from below Cougar Dam. Returns of natural-origin Chinook to the McKenzie River have been poor in recent years, causing significant concern to NMFS. Under the Endangered Species Act, it is very important to maximize successful reproduction of these natural-origin salmon, especially during these years of low returns. The survival rate of juvenile Chinook salmon produced from above Cougar Dam is poor, primarily associated with poor downstream passage conditions at the dam. Available information shows the adult to adult replacement rate is currently less than 0.41; meaning < 0.41 adult offspring return from every adult placed above Cougar Dam. As expected, the total number of natural-origin Chinook salmon returning to Cougar Dam trap has been declining from 2010 to 2014. Given the poor returns of natural-origin salmon to the McKenzie River as a whole and poor productivity of salmon placed above Cougar Dam, the protocols at Cougar trap need to minimize impacts on natural-origin salmon originating from below Cougar Dam in an effort to maximize spawning escapement in the McKenzie River below Cougar Dam. Based upon the results in Banks et al. (2013) and (2014), the proposed protocol in 2015 will help accomplish this by reducing the number of natural-origin Chinook salmon placed above Cougar Dam that did not originate from there; thus maximizing spawning escapement in the McKenzie River below Cougar dam in 2015 when returns to date have been poor.

The genetic pedigree study needs to continue for Chinook salmon at Cougar Dam. This information has been essential for determining production of Chinook from above Cougar Dam and for measuring the potential impact on natural-origin Chinook produced below Cougar Dam. Even though tissue samples are being collected every season, the genetic analysis results are only available from 2012 and 2013. In these two years, the collection at Cougar trap of natural-origin Chinook that did not originate from above Cougar Dam varied substantially. With only two years of data, it has been difficult to determine the extent of possible impact from current trap operations on the natural-origin Chinook produced below Cougar Dam. Therefore, there is a critical need to analyze genetic pedigree data from 2014 and 2015 to help inform current trapping and transport protocols for Cougar trap. NMFS continues to request the Corps fund analyses of the genetic samples as soon as possible because the results are vital for ongoing management. By not having updated genetic results from salmon collected at Cougar Dam, it is prudent in 2015 to be more precautionary with management of natural-origin salmon to minimize the number of salmon that are mined from the population below Cougar Dam. This will maximize spawning escapement in the McKenzie River below Cougar Dam in 2015.

The Corps requested a "management decision framework" be developed before the genetic pedigree study would be funded again. The Memorandum of Coordination emailed to the region included the document "*15CGR02 Attachment 1 AFF Operations and Transport Protocols ODFW NMFS*" that was written by the Corps for this purpose. NMFS and the Oregon Department of Fish and Wildlife have provided comments on this document. We hope this document now satisfies the Corps needs and will fund analyses of the genetic pedigree samples collected from 2014 and 2015 to help inform management at Cougar Dam in 2016 and beyond.

We have also included some previous correspondence (Attachment) provided to the WATER Hatchery Management Team on May 20, 2015, regarding important aspects of the pedigree results and the need to fund pedigree samples collected in 2014 and beyond. Please direct questions or concerns about these comments to Lance Kruzic at lance.kruzic@noaa.gov or 541-957-3381.

Literature Cited:

Banks, Michael A., Kathleen G. O'Malley, Nick Sard, Dave Jacobson, Michael Hogansen, Kirk Schroeder, and Marc A. Johnson. 2013. Genetic pedigree analysis of spring Chinook salmon outplanted above Cougar Dam, South Fork McKenzie River. Prepared for U. S. Army Corps of Engineers Portland District – Willamette Valley Project. 333 SW First Ave. Portland, Oregon 97204. June 2013.

Banks, Michael A., Nick Sard, Kathleen G. O'Malley, Dave Jacobson, Michael Hogansen, Kirk Schroeder, and Marc A. Johnson. 2014. A genetics-based evaluation of the spring Chinook salmon reintroduction program above Cougar Dam, South Fork McKenzie River, 2007-2013. Prepared for U. S. Army Corps of Engineers Portland District – Willamette Valley Project. 333 SW First Ave. Portland, Oregon 97204. June 2013.

Attachment

For HMT Meeting, May 20, 2015

Issue: Funding of Cougar Pedigree Adult Samples from 2014 and Beyond

From: L. Kruzic, NMFS

1. As background, there are two purposes of the genetic pedigree study of spring Chinook salmon at Cougar Dam as directed by BiOp RPAs: 1) determine natural production of Chinook salmon from above Cougar Dam, and 2) evaluate the reproductive success of both hatchery-origin and natural-origin Chinook outplanted above Cougar Dam.

2. Experimental design for pedigree analysis to date – Genetic sampling of outplanted hatchery Chinook began in 2007. The Cougar trap was operational in 2010 and the first collection and outplanting of natural-origin Chinook to Cougar Dam began in that year. As of 2010, the outplanting strategy was to try to obtain 50% natural-origin and 50% hatchery-origin Chinook outplanted above Cougar Dam to allow balanced comparisons between the reproductive successes of hatchery- and natural-origin fish. However, due to low returns of natural-origin fish, the 1:1 ratio was not attained in most years (2011 and 2012 had the closest ratios).

3. Pedigree results to date – 2012 and 2013 pedigree results represent adult returns through age 5 (completed cohorts) for the offspring of hatchery fish outplanted in 2007 and 2008. Results prior to this time do not represent all age classes of returns (which are predominately age 4 and age 5). 2014 samples have not been analyzed.

4. Important results from two years of data (2012 and 2013) –
    a. The cohort replacement rate to date is poor (0.41 and 0.31), and thus there is concern about putting any natural-origin Chinook above Cougar Dam (and especially natural-origin Chinook that don't assign as progeny of outplants above Cougar Dam). For the two years of complete data, the number of unassigned Chinook (not from above Cougar) varied dramatically at the trap during the course of the season, with high (~80%) and low (~20%) assignment rates in the early and late months of the migration.
    b. Of concern was in 2012 when substantial numbers of unassigned Chinook were placed above Cougar Dam during July-August and thus taken out of the McKenzie wild population. With only two years of data available, it is not known whether this was an anomaly or pattern.
    c. With recent declines in counts of natural-origin Chinook at Leaburg Dam, the loss of any natural-origin Chinook from the mainstem sub-population is of concern.

5. There are no results, yet, for any comparison of adult returns from hatchery-origin vs natural-origin spawners above Cougar Dam. These results would first become available from samples collected in 2014 (from BY 2010 natural-origin fish), with full adult cohort return through age-5 in 2015.

6. The HMT has used the existing Cougar pedigree results to evaluate past outplanting actions and to inform the next season's strategies. These results have definitely guided management decisions to date. The results have been essential for management of the outplanting program above Cougar Dam and for examining impacts on natural-origin Chinook from below Cougar Dam.

7. The Corps decided to not fund the analysis of the 2014 Cougar samples even though the WATER RME process ranked the study as high priority. It is unknown whether the 2015 samples will be analyzed to inform management in 2016.

8. The Corps needs to commit to funding the Cougar adult pedigree studies in order to evaluate the primary objectives described in #1 above. This means funding samples from 2014 through 2018 (a generation of F2's). The pedigree analysis is described in RPA 9.5.1 #4 and will likely be required again in the new McKenzie hatchery consultation.