For HMT Meeting, May 20, 2015

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

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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.