**OFFICIAL COORDINATION REQUEST FOR**

**NON-ROUTINE OPERATIONS AND MAINTENANCE**

**COORDINATION TITLE –** Cougar Fish Facility Protocols (outplanting/recycling)

**COORDINATION DATE –** 19 April 2016

**PROJECT –** Cougar Dam

**RESPONSE DATE –** 11 May 2016

**Description of the problem**

Downstream fish passage conditions at Cougar Dam are currently too poor to support a self-sustaining sub-population of spring Chinook salmon. Therefore when adults originating from below the dam are transported above the dam, productivity of the McKenzie population is reduced. Various transport approaches for moving natural origin (unmarked) spring Chinook after collection at the Cougar Fish Facility have been implemented the last few years, with a goal to minimize transport of unmarked spring Chinook originating from below Cougar Dam upstream of the dam, and avoid “mining” from the downstream McKenzie spring Chinook salmon population. In ODFW’s proposal for the 2015 season, it called to limit transporting unmarked adult spring Chinook above Cougar Dam from the population of natural origin returns below Cougar Dam to 2% or less (Attachment 1).

In 2012 and earlier, any natural origin (unclippped) spring Chinook salmon were transported and released above Cougar Dam. During planning for the 2013 adult spring Chinook migration, it was proposed (Attachment 5) by the Oregon Department of Fish and Wildlife (ODFW) that any fish returning to the Cougar Fish Facility after September 1 be recycled downstream, and if they returned again to the Cougar Fish Facility they were then moved and released above Cougar Dam. This was based on pedigree studies indicating that the majority of fish returning to Cougar Dam before September 1 were offspring of transports above the dam. During 2015, ODFW and the National Marine Fisheries Service (NMFS) decided that all spring Chinook salmon, regardless of date, be recycled downstream, and if they returned again to the Cougar Fish Facility they would then be moved and released above Cougar Dam despite concern from the USACE (Attachment 2 and 3).

Continuing pedigree analysis performed by Oregon State University shows that the majority of fish returning to Cougar Dam before September 1 were produced above the dam. In 2013 and 2014, an estimate of about 2.4% of the downstream spawning population was transported above Cougar Dam and equates to approximately 4-5 spring Chinook salmon mined from the spawning population below Cougar Dam. The protocol implemented during 2015 resulted in transporting 1% of the downstream spawning population above Cougar Dam, however, this required double-floy tagging, excessive handling, and delaying spawning of natural origin spring Chinook salmon. These percentages are biased high since 1) the unassigned transports were calculated as a percent of the number of natural origin spawners instead of the number of natural origin returns, and 2) some unassigned transports likely originated from above Cougar Dam. In addition, some adults originating above Cougar may spawn below Cougar Dam, increasing productivity of the McKenzie population.

Since the “after September 1st recycling protocol” has essentially met the goal to minimize mining when considering the bias in the estimated 2.4%, the USACE is proposing to revert back to the this protocol in 2016 (described in Attachment 5) to move all natural origin (unclipped) adult spring Chinook salmon above Cougar Dam that return to the fish facility before September 1. Thereafter, fish will be recycled downstream unless they return again to the facility and will be transported and released above Cougar Dam.

[Attachments 1 and 4 are documents provided by ODFW and NMFS and provide additional context]



Figure 1. Results of pedigree analyses in the McKenzie River Basin of spring Chinook salmon produced above and below Cougar Dam (Sard presentation, Willamette Science Review 2016).

Table 1. Natural origin spring Chinook immigrants and fish outplanted above Cougar Dam from 2013-2015 (Personal Communication, Nick Sard, Oregon State University, April 2016).

|  |  |
| --- | --- |
|  | **Unmarked transported above Cougar** |
| **Year** | **NOR immigrants** | **Reintro.Fish** | **Total** |
| 2013 | 29 | 145 | 174 |
| 2014 | 25 | 108 | 133 |
| 2015 | 15 | 122 | 137 |

Table 2. Summary information on the percent of unassigned, unmarked adult McKenzie spring Chinook salmon entering Cougar Trap before and after September 1st, and transported above Cougar Dam, as a percent of the total estimated population of natural origin spawners in the McKenzie (excluding spawners above Cougar Dam). Unassigned refers to adult progeny that did not assign to parents which spawned above Cougar Dam using genetic pedigree analysis.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | McKenzie NOS (excluding above CGR)1 | Unassigned2 trapped as a % of NOS2 | Unassigned2 transported above CGR as a % of NOS3 | Recycling? |
| Before Sep 1 | After Sep 1 |
| 2011 | 2511 | 4.2% | 4.6% | 8.8% | No |
| 2012 | 1769 | 2.8% | 7.3% | 10.2% | No |
| 2013 | 1202 | 1.8% | 4.2% | 2.3% | After Sep 1 |
| 2014 | 1031 | 1.8% | 5.3% | 2.4% | After Sep 1 |
| 2015 | 1571 | 1.0% | 3.2% | 1.0% | All Season |

1. Data provided by Cameron Sharpe, ODFW, Personal Communication, April 2016.
2. Unassigned adults most likely originated below Cougar Dam, however a small percent could have originated above Cougar Dam spawned from adfluvial parents (see Sard presentation, Willamette Fisheries Science Review, February 2016)
3. Data provided by Nick Sard, OSU, Personal Communication, April 2016.

**Type of outage/change required**

The protocol for moving fish at the Cougar Fish Facility has changed the last few years and was documented in MOC 15CGR02 for the 2015 fish collection season. The protocol implemented during the 2013 and 2014 fish collection seasons was documented in Attachment 5 provided by ODFW. Ultimately, the protocol will be included into the Willamette Fish Operations Plan once a consistent protocol is established.

**Impact on facility operation**

Operations would revert back to those performed in 2013 and 2014 and should decrease required personnel time.

**Dates of impacts/repairs**

During the 2016 adult fish collection season through October 15.

**Length of time**

Implementation of proposed action will occur for the next several months through October 15.

**Expected impacts on fish**

Naturally produced spring Chinook salmon destined to spawn above Cougar Dam will not be: delayed, double floy tagged, and handled twice thus reducing stress to fish. Approximately 2% of fish that were produced below Cougar Dam may be transported and released above Cougar Dam.

**Comments from agencies**

**Final results**