# SYSTEM OPERATIONAL REQUEST: #2011-5

***The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: National Marine Fisheries Service, US Fish and Wildlife Service, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, the Shoshone-Bannock Tribes, the Columbia River Inter-Tribal Fish Commission.***

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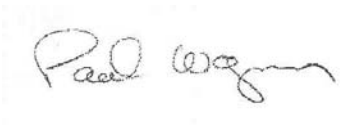

**FROM:** Paul Wagner, FPAC Chair

**DATE:** November 8th, 2011

**SUBJECT**: 2011 Bonneville Chum Operation

**OBJECTIVE**: Allow chum to spawn in the Ives Island area at elevations higher than the 11.5 foot elevation if fish numbers and hydrologic conditions are favorable.

**SPECIFICATIONS**:

1. During November 2011, continue to provide a Bonneville tailwater elevation of approximately 11.5 feet (range 11.3 – 12.0 feet).
2. If fish numbers of unspawned adult chum salmon are significant and natural precipitation results in flow levels that require a substantial increase in nighttime flow to maintain the 11.5 foot daytime tailwater, increase the day time tailwater elevation to approximately 12.5 feet to provide additional spawning habitat during the last week of November.
3. If fish numbers are significant and precipitation is sufficient, increase the tailwater elevation to approximately 13.5 feet during the month of December.

4. Maintain the 85% probability of achieving the April 10th flood control target at Grand Coulee Dam. TMT will use the weekly ESP forecasts, the monthly water supply and 90 day climate forecasts and fully consider the decision to reduce the tailwater elevation on a regular basis. If these forecasts indicate that the 85% probability of reaching the April 10 refill objective is at significant risk, the tailwater elevation would be lowered to an appropriate level.

**JUSTIFICATION:**

The Ives/Pierce Islands Complex below Bonneville Dam represents a limited natural spawning area for ESA listed Columbia River chum and unlisted Lower Columbia River bright fall Chinook. The NOAA 2004 Biological Opinion (BiOp) recognizes that access to spawning habitat in the Ives/Pierce area and Hardy and Hamilton creeks is primarily a function of the water surface elevation. More so, the BiOp and experience over the last thirteen years recognizes that managing water levels to a tailwater gage height rather than a flow level is preferable. Chum populations have dropped and have remained low in the Ives area since 2002 (Figure 1). The salmon managers are proposing to allow access to a range of habitats by increasing Bonneville tailwater elevations through the spawning season. Higher tailwater through Bonneville will potentially increase the amount of spawning habitat and change the locations of suitable redds (Garland et al 2003), and may provide additional returns to this area.

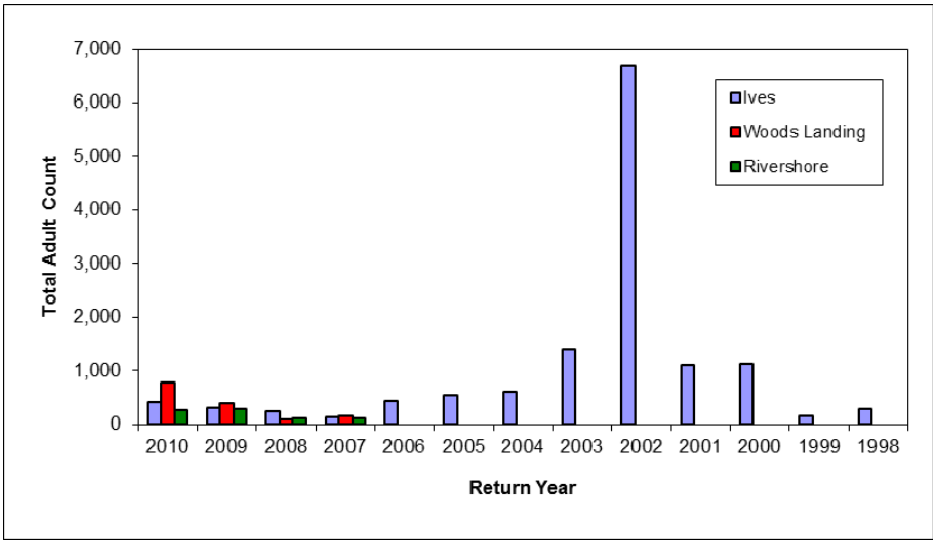


Figure 1: Total adult count of adult chum from 1998-2010. Data for Woods Landing and Rivershore sites have only been collected since 2007.

To avoid reducing the Bonneville tailwater elevation between the establishment of redds and emergence in the spring while still meeting the Biological Opinion April 10th Flood Control requirements, flow will be incrementally increased with the arrival of adult chum and/or the establishment of redds. Over the past 13 years, adult chum have begun to arrive at Ives spawning sites during, on average, the first week of November (Figure 2a). Peak adult

observations have occurred during the last week of November (Figure 2b). Redd formation has been observed as early as late October, but the average date of first observation is November 10th (Figure 3a). Peak redd density occurs, on average, December 1st (Figure 3b).

The salmon managers recognize that this operation increases the risk to achieving the 85% probability of meeting April 10 flood control target at Grand Coulee, which is important for spring migrating interior basin species, if redds are established at higher elevations and maintained through emergence. To help manage this risk the salmon managers will use the weekly ESP forecasts and fully consider the decision to reduce the tailwater elevation on a weekly basis, as well as the monthly water supply and 90 day climate forecasts available. If these forecasts indicate that the 85% probability of reaching the April 10 refill objective is at significant risk, the tailwater elevation would be lowered from 13.5 feet to the 12.5 feet elevation, then to the 11.5 foot elevation and lower still, if the April 10 refill objective appears to be at substantial risk. The strategy of this program is twofold. First, attempt to fill the available spawning area at the lower tailwater elevations and then gradually raise the tailwater to open up more suitable spawning area and reduce the incidence of superimposition of spawners. Second, to help reduce large flow fluctuations and create a more stable spawning condition. Some additional risk exists by placing redds at the higher elevations, but the numbers of redds expected to be formed at these higher elevations will be low, which will reduce the downside risk to the population if they cannot be maintained through emergence. The recent completion of additional spawning habitat in the Hamilton spring channel site should further reduce the risk to chum salmon spawning in the Ives Island area.

On October 21, 2011, two live chum adults were observed at the Ives/Pierce Complex (http://www.fpc.org/spawning/spawning_surveys/ODFW_reports/2011spawning.htm.). This is the earliest first date of observation in the past 13 years (Figure 2a). On November 1, 2011, nineteen live chum were observed at the Ives/Pierce Complex.

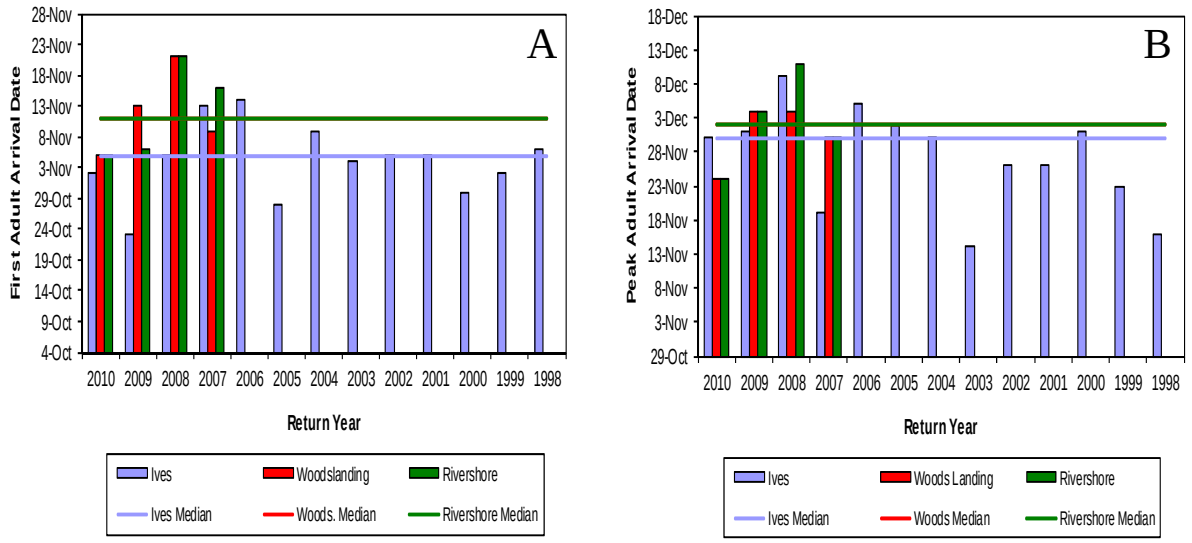


**Figure 2**. Dates of adult Chum observations for 1998-2010. Data for Woods Landing and Rivershore have only been collected since 2007. A) Date of first adult observation. B) Date of peak number of adults.

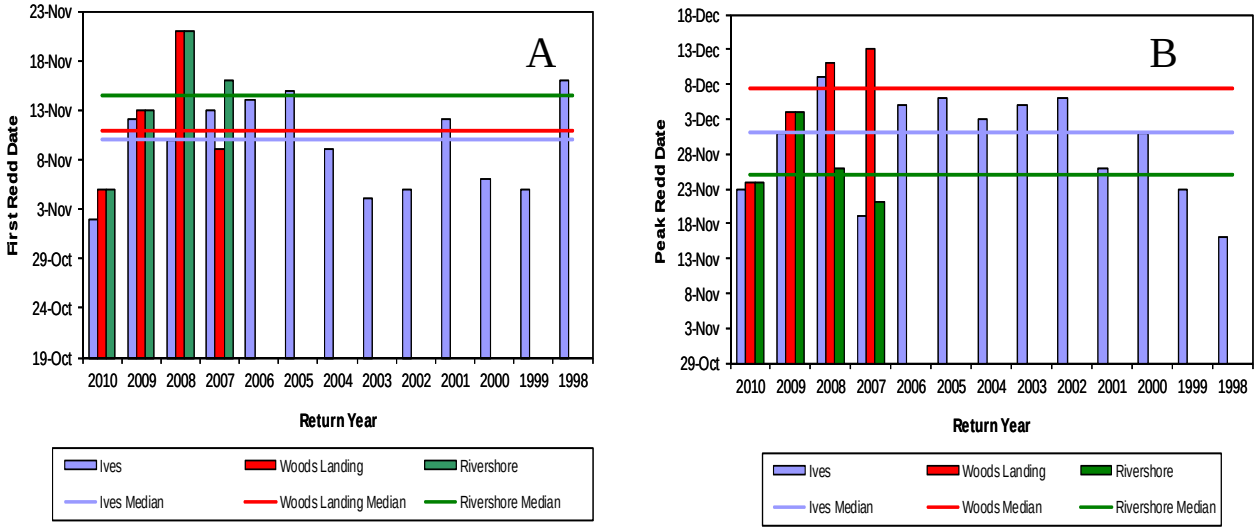


**Figure 3.** Dates of Chum redd observations for 1998-2010. Data for Woods Landing and Rivershore have only been collected since 2007. A) Date of first redd observation. B) Date of peak number of redds.

## References

Garland, R., Tiffan, K., Rondorf, D., Skalicky, J., Anglin, D. 2003 "Evaluation of Fall Chinook and Chum Salmon Spawning Habitat near Ives and Pierce Islands on the Columbia River", Project No. 1999-00301, 152 pgs (BPA Report DOE/BP-00004701-1)