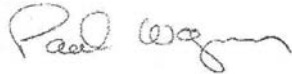


State, Federal and Tribal Fishery Agencies Joint Technical Staff Memo

*Columbia River Inter-Tribal Fish Commission
Idaho Department of Fish and Game
Washington Department of Fish and Wildlife
Oregon Department of Fish and Wildlife
NOAA National Marine Fisheries Service
US Fish and Wildlife Service
Nez Perce Tribe*

TO: Bernard Klatte, COE Portland District, FPOM Co-Chair
Tim Dykstra, COE Walla Walla, FPOM Co-Chair



FROM: Paul Wagner, Chairperson
Fish Passage Advisory Committee

SUBJECT: Operation of John Day PIT-Tag Detector in November

DATE: June 9, 2008

Per your request, FPAC has reviewed the PIT-tag database for PIT-tag detections in the Lower Columbia River in November. For this data request, the FPC staff reviewed PIT-tag detections at McNary (MCN) and Bonneville (BON) dams from November 1 to December 15 for juvenile salmonids that were released above MCN. These analyses were done for migration years 2006 and 2007. Following is a brief synopsis of the results from of the review. Although the following summary of PIT tag detections in November in the Lower Columbia River indicates that passage does occur, the decision to operate the bypass and detections systems should consider the full range of fish passage and hydrosystem management implications. **After considering the FPC review of the passage data and the prevailing uncertainties regarding fall and winter fish passage and survival, FPAC recommends that the PIT tag detection facilities and bypass systems continue full operations through November as described in the 2008 Fish Passage Plan (Section 4.1.1.3).**

- Significant present and future research projects have been implemented and proposed to assess the passage and survival of listed sub-yearling fall Chinook of Snake River origin. A key component of this research is their over-wintering location and survival. Both of these questions rely on late season juvenile PIT tag detections.

- Past data infers that sub-yearling fall Chinook may continue to migrate through the late fall, particularly those from the Clearwater River.
- The magnitude and location of over-wintering steelhead juveniles under some circumstances would be better defined with extension of PIT-Tag detection capability in the lower Columbia.
- These research projects could benefit greatly by additional late season juvenile detections through the operation of the John Day juvenile PIT-Tag detector in November.

Brief Synopsis of PIT-Tag Detections (Detailed discussion available in Appendix A):

- The juvenile PIT-tag detector at JDA has never operated in November and, thus, any PIT-tagged fish passing John Day Dam at this time would have been undetected.
- 483 PIT-tagged juvenile salmonids were detected at MCN and BON from November 1-December 15 in 2006, while only 18 were detected in 2007.
- In both years, the majority of the detections during this time period were of subyearling Chinook. Approximately 83% of the subyearling Chinook detected in 2006 were from the Clearwater River (mostly fall Chinook surrogates), while 15% were subyearling Chinook tagged at Rock Island Dam or the Entiat River. However, there were no Clearwater River subyearling Chinook detected in 2007 (no surrogate releases were made in 2007). The vast majority of the subyearlings detected in 2007 (94%) were tagged at Rock Island Dam or the Entiat River.
- Sockeye released into Lake Wenatchee made up a substantial portion of the fish detected in the Lower Columbia River in November 2006. There were no sockeye detections during this period in 2007.
- Given that releases of surrogate fall Chinook are planned for 2008, we anticipate that many of these fish will be passing JDA during this period, particularly those released in the Clearwater River.

Appendix A

Details of PIT-tag Detections in November and December at Bonneville and McNary Dams

Methods:

The juvenile PIT-Tag detector at John Day Dam (JDA) has never operated in the late fall (Table 1). This detector is typically turned off by mid-September but has operated as late as October 31st (MY 2000).

Table 1. End date for PIT-Tag detections for the John Day Dam juvenile PIT-tag detector

Migration Year	End Date for JDJ PIT-Tag Detections	Migration Year	End Date for JDJ PIT-Tag Detections
2007	Sept. 13	2000	Oct. 31
2006	Sept. 14	1999	Oct. 4
2005	Sept. 15	1998	Oct. 29
2004	Sept. 15	1997	Sept. 6
2003	Sept. 15	1996	Sept. 8
2002	Sept. 16	1995	Sept. 26
2001	Sept. 17	1994	Sept. 20

To estimate JDA passage in November, the FPC staff relied on PIT-tag detections at MCN and BON from November 1 to December 15, for migration year 2006 and 2007. Based on the detection date at MCN and/or BON, a JDA passage date was estimated for each PIT-tagged juvenile detected at MCN and/or BON. Due to a lack of data, estimates of fish travel time from MCN to JDA or JDA to BON were not possible during this time period. Therefore, the JDA passage date was estimated through the use of water travel time regression equations (Figure 1). The regression equations predicted water travel time (days) based on the mean daily flow at MCN for those PIT-tagged fish that were detected at MCN and the mean daily flows at JDA and TDA dams for those PIT-tagged fish that were detected at BON.

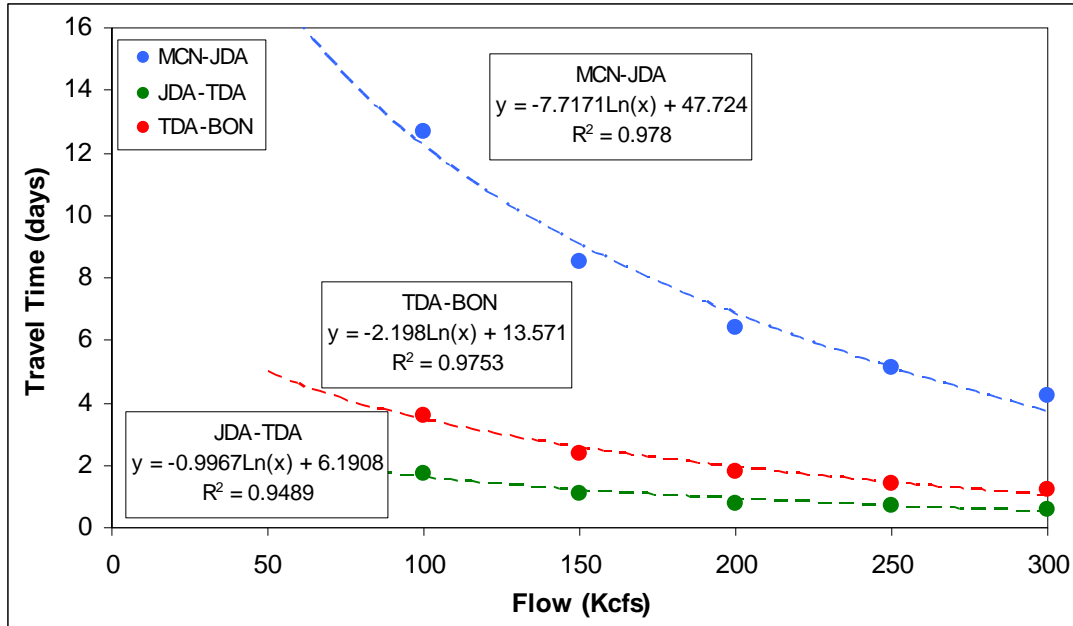


Figure 1. Water travel time regression equations used to estimate John Day arrival date.

Results:

A total of 483 PIT-tagged juveniles were detected at MCN and/or BON from the period of November 1 to December 15, 2006 (Table 2). Based on the estimated JDA detection date, approximately 194 of these juveniles would have passed JDA from November 15 to 30. Of these, about 58.2% were subyearling Chinook, 41.2% were sockeye, and 0.5% were steelhead (Table 2).

Table 2. Estimated passage at JDA from November 1 to December 15, 2006.

Estimated Date at John Day Dam	Total Detections	Percent of Detections		
		CH0	SO	ST
11/1-11/14	4	100.0	0.0	0.0
11/15-11/30	194	58.2	41.2	0.5
12/1-12/15	285	69.5	30.5	0.0

The majority of the juveniles detected at MCN and BON during this time (Nov. 1-Dec. 15) were subyearling Chinook. Approximately 82.9% of these subyearlings were hatchery subyearling fall Chinook released into the Clearwater River in June and July, 2006. About 98% of these Clearwater River subyearling fall Chinook were fall Chinook surrogates. Approximately 14.3% of the subyearlings were tagged and released at Rock Island Dam or in the Entiat River in July through September 2006. The remaining 2.8% were subyearling fall Chinook released into the Snake River (Table 3).

All of the sockeye detected at MCN and/or BON during this time (Nov. 1 – Dec. 15) were released from Lake Wenatchee in October 2006. Finally, one steelhead was detected at MCN during this time. This steelhead juvenile was released into the Yakima River in October 2006. Table 2 provides a list of all the different release where fish detected during this time were released from (Table 3).

Table 3. Release sites of PIT-tagged juvenile salmonids passing BON and/or MCN from Nov. 1 to Dec. 15, 2006.

Species	Total Detected (Nov. 1 – Dec. 15)	Release Sites	Number Detected from Release Site
Subyearling Chinook	315	BCCAP	255
		NPTH	2
		SNAKE1	1
		SNAKE3	8
		CLWR	4
		ENTIAR	15
		RI2BYP	30
Sockeye	167	WENATL	167
Steelhead	1	YAKIM1	1

Only 18 PIT-tagged juveniles were detected at MCN and/or BON from the period of November 1 to December 15, 2007 (Table 4). Based on the estimated JDA detection date, approximately 7 of these juveniles would have passed JDA from November 15 to 30. All juveniles estimated to pass JDA from Nov. 15-30 were subyearling Chinook (Table 4).

Table 4. Estimated passage at JDA from November 1 to December 15, 2007.

Estimated Date at John Day Dam	Total Detections	Percent of Detections	
		CH0	ST
11/1-11/14	3	100.0	0.0
11/15-11/30	7	100.0	0.0
12/1-12/15	8	87.5	12.5

The majority of the juveniles detected at MCN and BON during this time (Nov. 1-Dec. 15) were subyearling Chinook. Unlike 2006, 94% of the subyearling Chinook detected in 2007 were tagged and released from Rock Island Dam or in the Entiat River. Only one of the subyearlings detected in 2007 was from the Snake River (there were no surrogate releases made in 2007). This juvenile was tagged and released at Lower Granite Dam (Table 5). Also, there were no detections of juvenile sockeye in 2007. Finally, one steelhead was detected during this period in 2007. This was a hatchery steelhead released from Wallowa Hatchery in April 2007.

Table 5. Release sites of PIT-tagged juvenile salmonids passing BON and/or MCN from Nov. 1 to Dec. 15, 2007.

Species	Total Detected (Nov. 1 – Dec. 15)	Release Sites	Number Detected from Release Site
Subyearling Chinook	17	LGRRRR	1
		ENTIAR	10
		RI2BYP	6
Steelhead	1	WALH	1

Discussion:

Subyearling Chinook

Approximately 500,000 subyearling fall Chinook surrogates were released into the Snake River Basin in 2006, of which 35% were released into the Clearwater River. Surrogates are hatchery fall Chinook that are reared to a smaller size in order to better emulate the wild population. Due to low returns of fall Chinook adults in 2006, there was a limited supply of fall Chinook juveniles in 2007. Therefore, there were no releases of subyearling fall Chinook surrogates in 2007. This explains why so many fewer subyearling Chinook were detected in 2007, compared to 2006. As many as 330,000 subyearling fall Chinook surrogates are scheduled for release in 2008. Given that the high number of detections in 2006, it is likely that many of the fall Chinook surrogates released in 2008 may be migrating past JDA in mid to late-November, particularly those released into the Clearwater River. Additional detections of these surrogates in the Lower Columbia River would be extremely valuable to this research project.

To date, getting juvenile PIT-tag detections at John Day Dam required the operation of the Juvenile Bypass System (JBS), which required some level of handling. However, with the installation of the Full Flow Bypass system at JDA, the added handling is no longer required. Present and future research projects on Snake River subyearling fall Chinook would benefit greatly from the increased detections in the Lower Columbia River. For example, PIT-tag detections at JDA could provide insight into over-wintering location and survival of these subyearlings.

Sockeye:

As mentioned earlier, there were a substantial number of sockeye juveniles detected at BON and/or MCN in 2006, but no detections in 2007. Sockeye are typically released into Lake Wenatchee in late October for out-migration the following spring. However, it appears that many of the sockeye released in October 2006 began to out-migrate immediately after release, as they were detected at MCN and/or BON several weeks later. This did not seem to occur in 2007, as there were no detections of sockeye juveniles at MCN and/or BON in November or December 2007. A release of approximately 200,000 sockeye juveniles to Lake Wenatchee is scheduled for late October 2008.