



Fall Chinook Work Group

Monday, 29 October 2018

Grant PUD (USBOR Building)

Ephrata, WA

Technical members

Paul Wagner, NMFS	Joe Skalicky/Don Anglin, USFWS
Jeff Fryer, CRITFC	Paul Ward/Bob Rose, YN
Holly Harwood, BPA	Brett Swift, American Rivers
Keith Truscott, CPUD	Tom Kahler, DPUD
Bill Tweit, WDFW	Paul Hoffarth, WDFW
Breean Zimmerman, WDOE	John Clark, ADFG
Peter Graf, GPUD	Todd Pearsons, GPUD
Steve Hemstrom, CPUD	

Attendees:

Peter Graf, GPUD	John Clark, ADFG (phone)
Paul Hoffarth, WDFW (phone)	Paul Wagner, NMFS (phone)
Todd Pearsons, GPUD	Tom Kahler, DPUD
Jeff Fryer, CRITFC	Geoff McMichael, Mainstem Fish Res (phone)
Dani Evenson, ADFG (phone)	Tom Skiles, CRITFC (phone)
Josie Thompson, NMFS (phone)	Tracy Hillman, Facilitator

Action Items:

1. Peter Graf will provide updates on the HRFPPA Periods and Flow Constraints.
2. FCWG members will review the draft 2018 HRFPPA Report and provide edits/comments to Peter Graf by Friday, 30 November 2018.
3. Peter Graf will work with Grant PUD administrative staff on uploading FCWG/HRWG documents to the Grant PUD website or to a SharePoint site.

Meeting Minutes

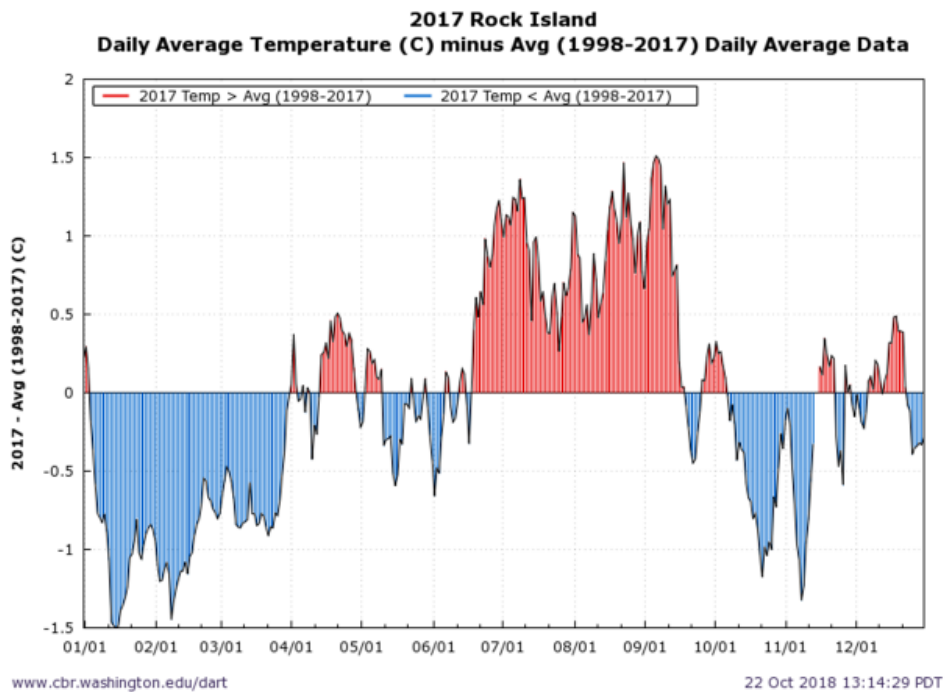
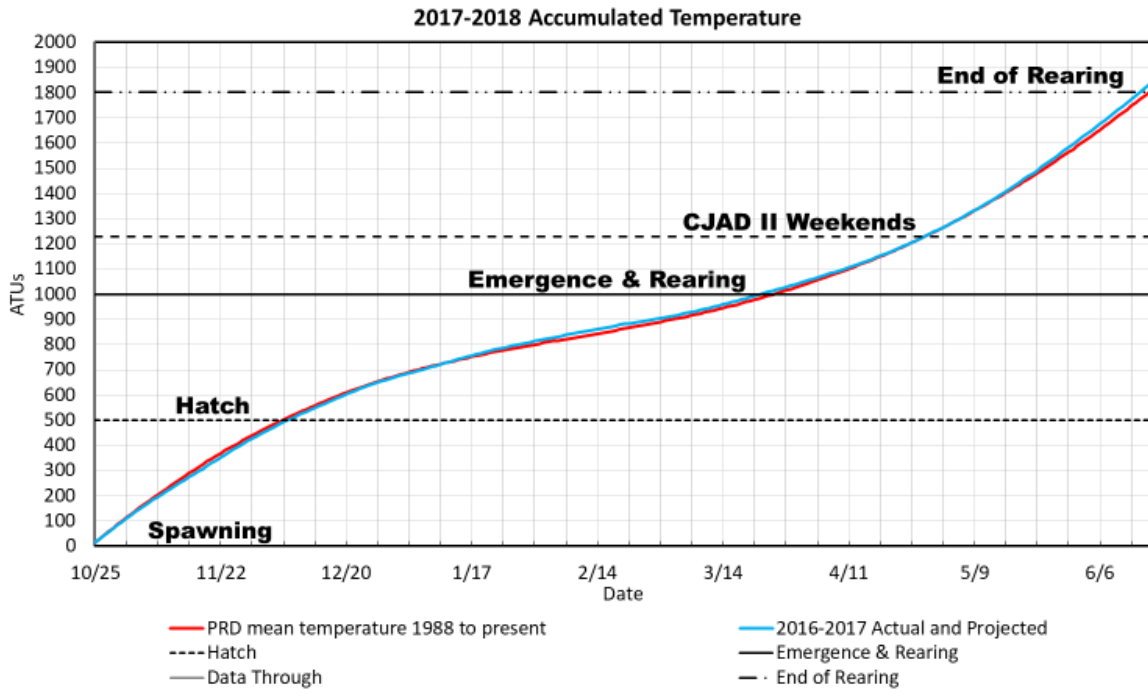
- I. **Welcome and Introductions** – Tracy Hillman welcomed attendees to the meeting. Attendees introduced themselves.
- II. **Agenda Review** – The agenda was reviewed and approved with the addition of one agenda item: discussion on making FCWG/HRWG documents available on a website.
- III. **Review of Action Items** - Action items identified during the 10 April 2018 meeting were discussed.
 - Peter Graf will provide updates on the HRF CPPA Periods and Flow Constraints. **Ongoing.**
- IV. **HRWG Activities**

2017-2018 Protection Program Draft Annual Report – Peter Graf said that the draft report is nearly complete and will be distributed to the FCWG/HRWG this week. Peter explained that the draft report is similar to past reports and will focus on flow constraints and spawning on Vernita Bar, while the Priest Rapids Hatchery M&E report will provide biological information. He then gave a brief overview of information and results contained in the draft report.

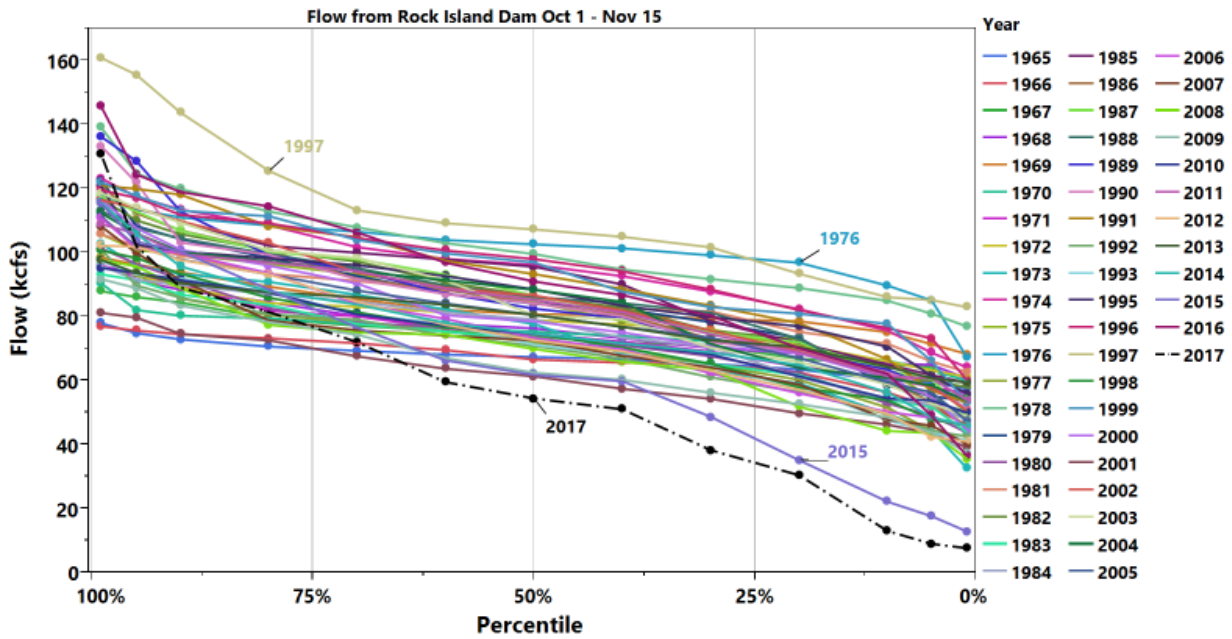
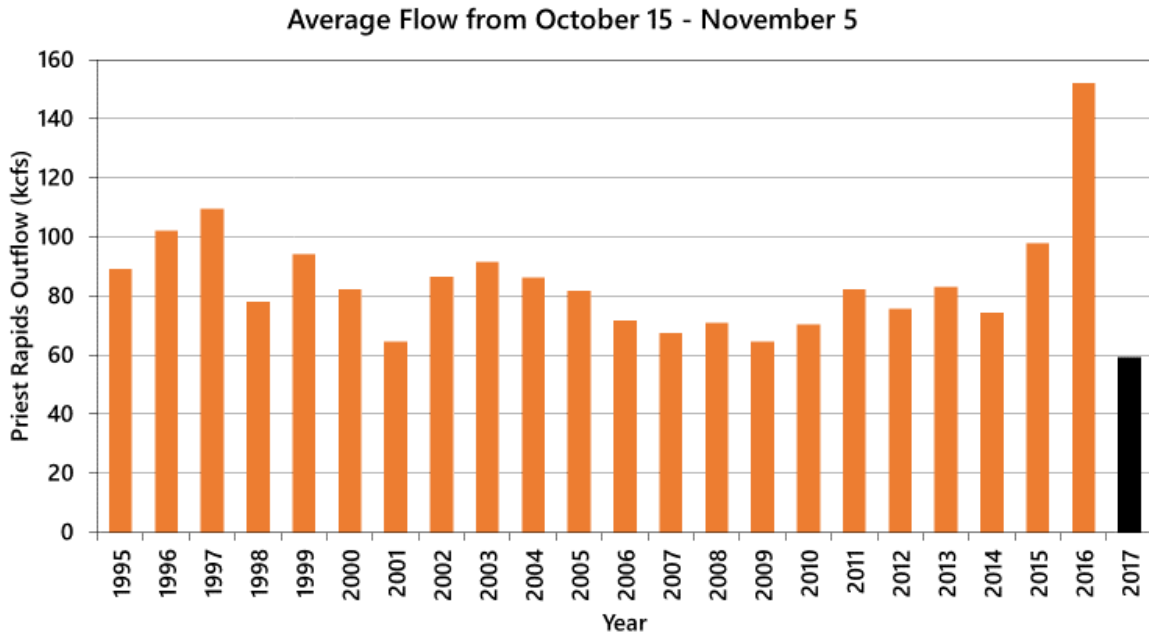
Peter provided a summary on fall Chinook spawning surveys conducted last year. Peter said there was a slow start to spawning last year. They (Grant PUD and WDFW) conducted six redd surveys on Vernita Bar in 2017. They observed no redds during the first spawning survey. They observed 49 redds below the 50 kcfs elevation on the second survey (29 October), establishing the Initiation of Spawning date for the below 50 kcfs elevation at 25 October. On 12 November, 40 redds were counted above 50 kcfs, establishing the Initiation of Spawning date above 50 kcfs at 8 November 2017. They conducted their final redd survey on 26 November 2017.

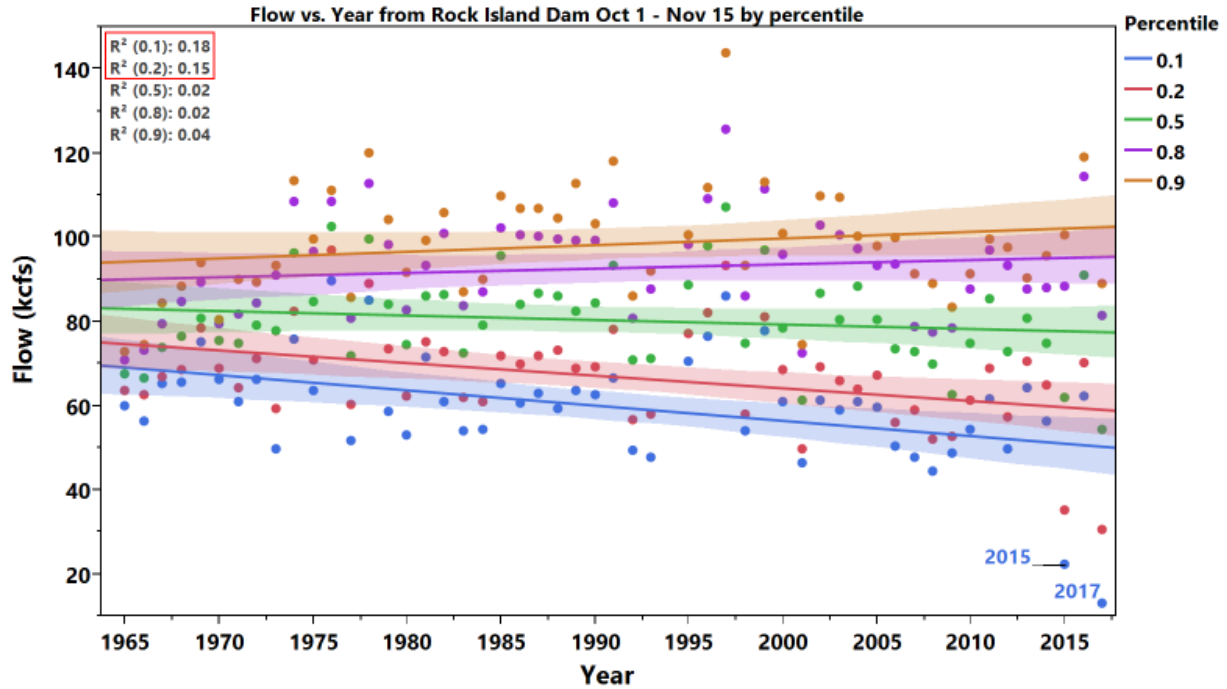
Peter said they counted 116 redds, which was considerably lower than the numbers counted in the previous four years when the spawning escapements were much larger. Based on redd surveys, the critical elevation was set at 60 kcfs.

Peter then described the flow and temperature conditions on Hanford Reach. Water temperatures during spawning were cooler than average, while temperatures during incubation and rearing were warmer than average (see Figures below).



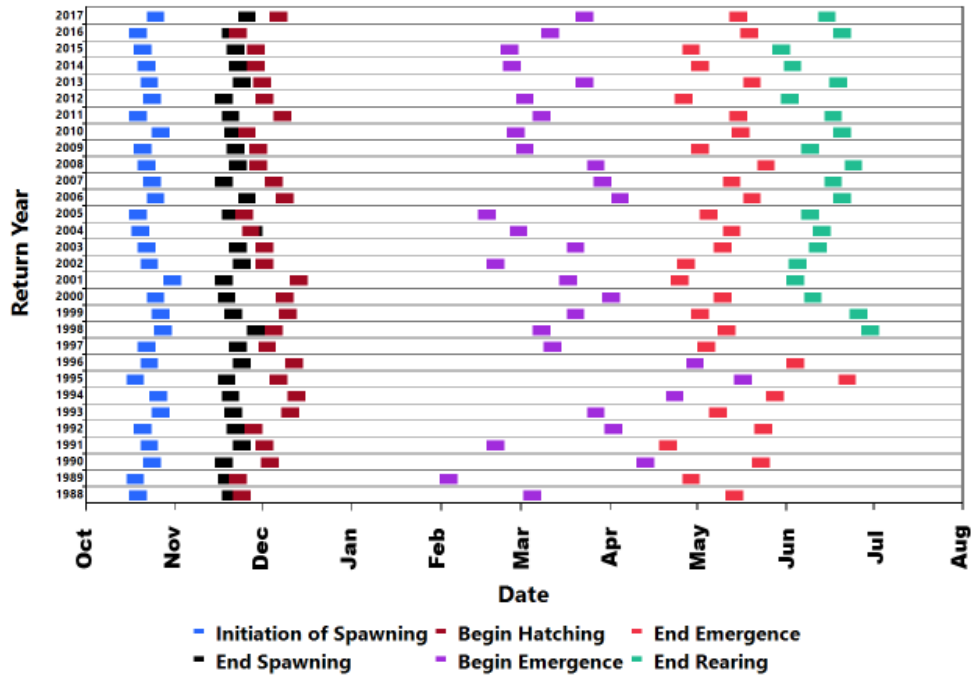
Peter noted that flows started out relatively high but decreased significantly during the spawning period (see Figures below).



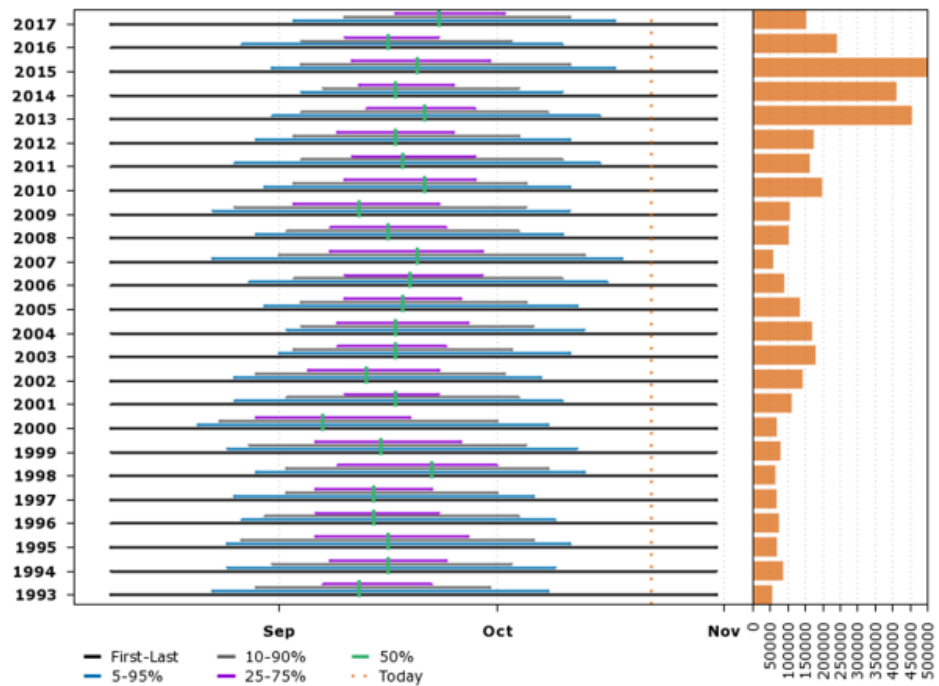


Peter noted that flow management operations during the 2017-2018 season were highly successful. He indicated high minimum flows during emergence and rearing made it relatively easy to hit all flow constraints. There were no flow violations during the 2017-2018 protection period.

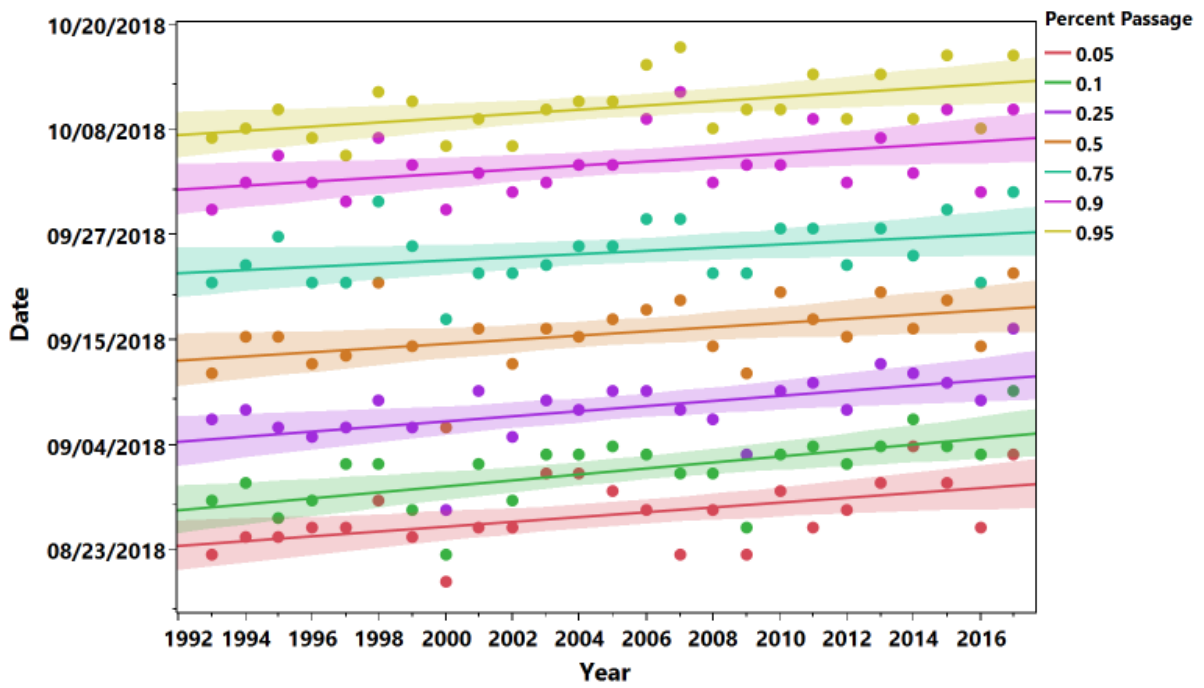
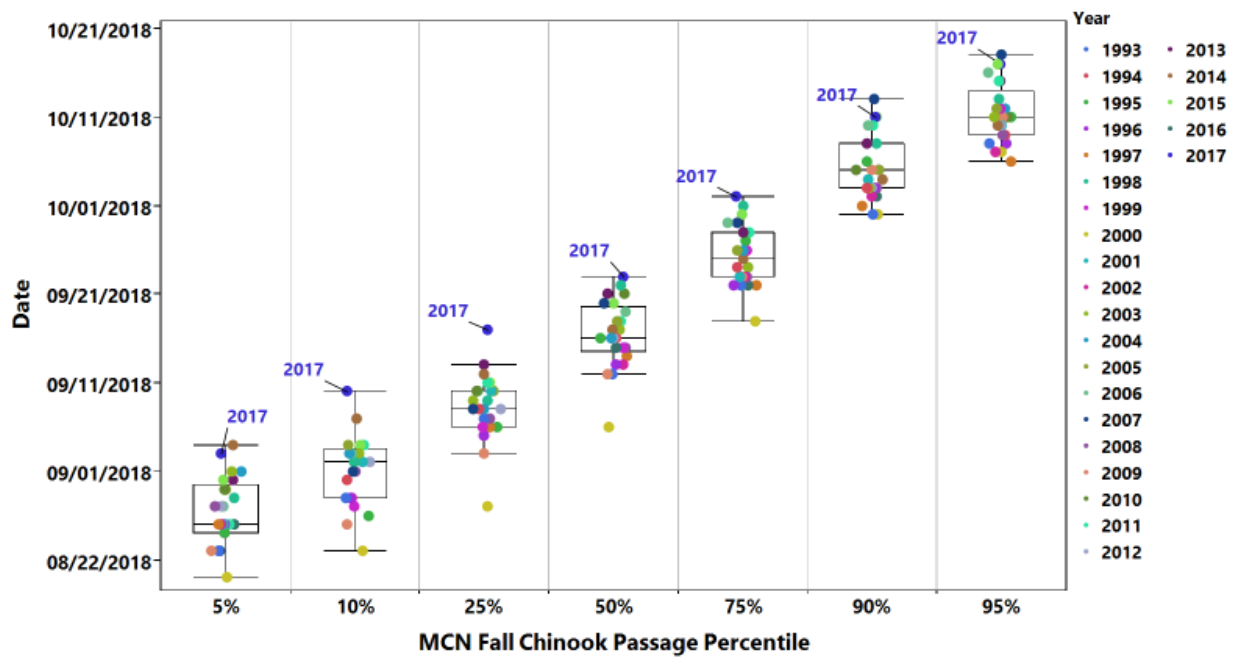
Peter noted that spawn timing was late last year and showed how spawn timing has varied over the years (see Figures below).



Run Timing



He then showed the variation in run timing at McNary Dam (see Figures below). He noted that the 2017 fall Chinook run was late at McNary Dam.



Peter said the draft annual report will be available this week for a 30-day review.

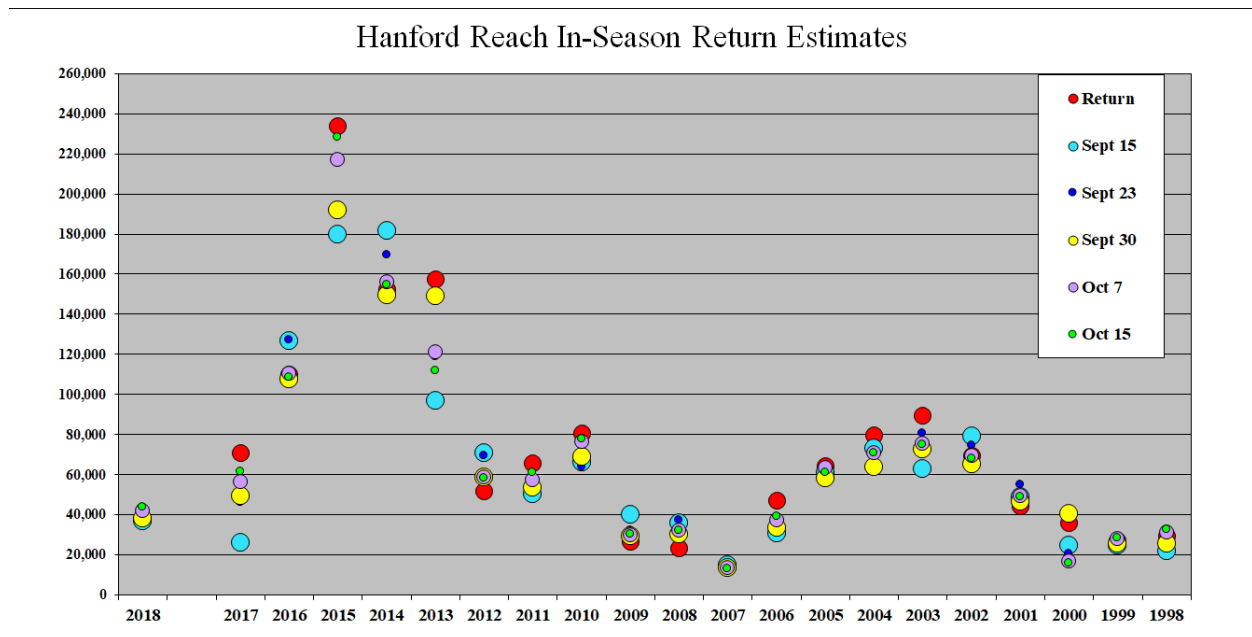
2018 Estimated Fall Chinook Escapement – Paul Hoffarth reported, based on his recent forecast, that about 43,758 natural-origin fall Chinook should escape to the Hanford Reach this year (see Tables below). Last year, 71,303 adults escaped to the Reach. Paul said the spawning escapement goal is about 31,000 natural-origin Chinook.

In-season Natural Origin Return Estimate					
Est. Return	Sep 15	Sep 23	Sep 30	Oct 07	Oct 15
	36,779	37,105	38,326	41,686	43,758
Est. Return (2018)					
Estimated Return	Fish Counts	McNary	Ice Harbor	Priest Rapids	McN-IHR-PR
					0
		8/9	8/12	8/14	
	Return				Adjusted for proportions of hatchery chinook in the harvest
	41,686				
Adult Escapement Goal					
	31,110				
Adult Harvest Quota					
Est Escapement	Quota	Adj Escapement		Current Harvest	Remaining
< 34,500	5,211	37,778	Max	8,488	
34,500-52,000	8,193	35,541	11,786		-295
>52,000	-419	42,000			

Return*				Escapement				Harvest			Harvest (%)		
Year	Adult	Jack	Total	Year	Adult	Jack	Total	Adult	Jack	Total	Adult	Jack	Total
2017	82,792	3,328	86,120	2017	71,303	2,456	73,759	11,489	872	12,361	13.9%	26.2%	14.4%
2016	126,719	7,495	134,214	2016	109,860	6,427	116,287	16,859	1,068	17,927	13.3%	14.2%	13.4%
2015	267,812	33,954	301,766	2015	233,927	32,401	266,328	33,885	1,553	35,438	12.7%	4.6%	11.7%
2014	181,196	35,028	216,224	2014	152,517	31,290	183,807	28,679	3,738	32,427	15.8%	10.7%	15.0%
2013	182,405	20,065	202,471	2013	157,484	17,356	174,841	24,921	2,709	27,630	13.7%	13.5%	13.6%
2012	64,915	11,570	76,485	2012	51,813	5,897	57,710	13,102	5,673	18,775	20.2%	49.0%	24.5%
2011	77,322	12,181	89,503	2011	65,724	9,532	75,256	11,598	2,649	14,247	15.0%	21.7%	15.9%
2010	91,393	8,149	99,542	2010	80,408	6,608	87,016	10,985	1,541	12,526	12.0%	18.9%	12.6%
2009	32,899	12,627	45,526	2009	26,346	10,374	36,720	6,553	2,253	8,806	19.9%	17.8%	19.3%
2008	28,999	7,072	36,071	2008	23,361	5,697	29,058	5,638	1,375	7,013	19.4%	19.4%	19.4%
2007	18,501	10,237	28,738	2007	13,887	8,385	22,272	4,614	1,852	6,466	24.9%	18.1%	22.5%
2006	51,150	5,057	56,207	2006	47,095	4,606	51,701	4,055	451	4,506	7.9%	8.9%	8.0%
2005	71,897	8,044	79,941	2005	64,355	7,612	71,967	7,542	432	7,974	10.5%	5.4%	10.0%
2004	87,546	8,936	96,483	2004	79,464	8,231	87,696	8,082	705	8,787	9.2%	7.9%	9.1%
2003	95,769	11,929	107,698	2003	89,312	11,196	100,840	6,457	733	7,190	6.7%	6.1%	6.7%
2002	76,667	16,167	92,834	2002	69,342	15,167	84,509	7,325	1,000	8,325	9.6%	6.2%	9.0%
2001	56,965	17,138	74,103	2001	51,394	15,708	67,102	5,571	1,430	7,001	9.8%	8.3%	9.4%
2000	39,462	12,669	52,131	2000	36,027	11,993	48,020	3,435	676	4,111	8.7%	5.3%	7.9%
1999	32,112	3,300	35,412	1999	27,012	2,800	29,812	5,100	500	5,600	15.9%	15.2%	15.8%
1998	32,710	6,733	39,443	1998	29,410	5,983	35,393	3,300	750	4,050	10.1%	11.1%	10.3%
Mean	57,221	10,121	67,341	Mean	50,330	8,653	59,005	6,890	1,468	8,358	13.3%	14.6%	13.4%
1998-2006	60,475	9,997	64,933	1998-2006	54,823	9,255	64,116	5,652	742	6,394	9.8%	8.3%	9.6%
2007-12	52,338	10,306	62,644	2007-12	43,590	7,749	51,339	8,748	2,557	11,306	18.6%	24.2%	19.1%

* includes hatchery origin fish harvested in sport fishery

Paul also showed the following figure, which indicates how closely the return forecasts estimate the actual escapements. In general, the forecasts tend to underestimate the actual escapements when escapements are large. At lower escapements, return forecasts are close to that actual escapements.



Paul described briefly the Harvest Management Plan, which is set up to meet harvest goals on the Reach. He displayed the spreadsheet that he uses to calculate harvest and showed how harvest quota changes with escapement levels. The management plan allows for a 10% harvest allocation at low escapements (<34,500 fish). At escapements greater than 34,500 fish, harvest allocation increases.

Paul indicated that anglers were very successful in capturing natural-origin broodstock on the Reach for the Priest Rapids Fall Chinook Hatchery Program. Within a three-day period, anglers captured 1,209 natural-origin Chinook, which were delivered to the hatchery. A total of 1,161 Chinook survived (~4% mortality). Paul said that within the first 1.5 hours of fishing, anglers captured 300 Chinook. Overall, the effort included 279 anglers and 87 boats.

2018-2019 Protection Program Update – Peter Graf reported that Reverse Load Factoring (RLF) began on 15 October. They (Grant PUD and WDFW) conducted their first spawning survey on Vernita Bar on 21 October. They observed one redd below the 50 kcfs elevation and no redds above the 50 kcfs elevation. A second survey was conducted on 28 October. During this survey, they observed six redds below the 50 kcfs elevation and two above. Because five redds are required for the Initiation of Spawning, Peter said the Initiation of Spawning below the 50 kcfs elevation was set on Wednesday, 25 October. Crews will conduct a third survey on 4 November and a fourth survey on 18 November. If necessary, a final survey will be conducted on 25 November. Spawning surveys are needed to determine the Critical Elevation.

Peter indicated that all temperature and flow data are displayed on the Grant PUD website: <https://www.grantpud.org/water-quality>

2018 CRITFC Tagging Activities – Jeff Fryer gave a presentation on tagging activities on the Reach in 2018 (see Attachment 1). Jeff noted that since 1987, CRITFC has coordinated a project to tag 200,000 juvenile fall Chinook with coded wire tags (CWTs) on the Reach. They have met this goal in 17 out of the 31 years. He added that before 2017, hatchery fish were released from the Priest Rapids Hatchery after tagging was completed. Since 2017, however, hatchery fish have been released both before and after tagging. Jeff then described methods for collecting and tagging juvenile Chinook, including culling procedures. They cull injured Chinook, non-Chinook species, and Chinook smaller than 48 mm and larger than 80 mm for coded wire tagging, further sorting into two size groups: 48-60 mm and 60-80 mm.

In 2018, crews tagged and released 256,300 juvenile Chinook. Jeff said this year, mortality was low and about 90% of the Chinook

captured were of taggable size. Jeff indicated that success this year was based on high abundance of juvenile Chinook on the Reach, a high percentage of juvenile Chinook of taggable size, and experienced crews.

Jeff then described PIT tagging efforts on the Reach. He summarized tagging methods and noted that only fish between about 60 and 80 mm were PIT tagged (because sorting is done visually, some fish outside these bounds are PIT tagged). He indicated that survival of PIT-tagged fish from release to McNary Dam was about 25%, which is less than in other years. As a comparison, survival of tagged hatchery fish from their release site to McNary Dam was about 52%, which was also lower than hatchery fish survival rates during most other years. He indicated that about 3-4% of the PIT-tagged Chinook were lost to avian predation. It is unknown why survival to McNary Dam was so low this year.

Jeff also described the amount of time that it took PIT-tagged Chinook to travel from the release site to McNary Dam. On average, tagged wild fish traveled from the release site to McNary Dam in 31 days; tagged hatchery fish traveled from their release site to McNary Dam in 20 days. Jeff also tracked travel times from release to John Day and Bonneville dams. Wild fish averaged 35 days from release to John Day and 34 days from release to Bonneville Dam. Hatchery fish averaged 23 days from release to John Day and 24 days from release to Bonneville Dam. Travel times were longer in 2018 than in previous years.

Jeff indicated that the release of hatchery Chinook before the tagging effort had some effects on their study. He said some unknown number of unclipped hatchery fish were included in their tag group, stating that 25% of the hatchery group released before CRITFC began tagging were less than 80 mm in length and about half of those were unclipped. Hatchery releases also resulted in more time needed to sort fish for tagging and limited PIT tagging to fish less than 80 mm, which affects comparison of survival estimates to past years.

Jeff identified non-target species captured during the tagging study. Most non-target species included northern pikeminnow, shiners, stickleback, sculpin, whitefish, and peamouth.

Jeff concluded by stating that the tagging effort was very successful in 2018. He noted that the early release of hatchery fish did have some effects on the tagging effort, including an increased number of fish to process, inclusion of some hatchery fish in the tagging process, and no PIT tagging of fish larger than 80 mm.

Jeff said they will be tagging again in 2019. Because of the lower adult escapement in 2018, the capture of juveniles in 2019 may be more

difficult. They will have 250,000 CWTs and 10,000 PIT tags for next year.

Todd Pearsons asked Jeff to provide an estimate of the encounter rate of Priest Rapids Hatchery fish. Based on a simple calculation, Todd believes the encounter rate of hatchery fish is quite low (<1%). Paul Wagner asked how many fish at Ringold Hatchery are tagged. Todd indicated that all fish are adipose clipped and tagged with CWTs.

V. Priest Rapids Hatchery Activities

2017 Priest Rapids Hatchery M&E Report – Todd Pearsons said the 2017 draft Priest Rapids Hatchery M&E Report went through a 30-day review. Grant PUD is in the process of finalizing the report. Todd noted that the river-wide (three population) proportionate natural influence (PNI) was 0.84 (the PNI target is 0.67 for the fall Chinook programs). This is the highest PNI reported for the program. The PNI for the previous year was 0.70. Todd said the final report should be available soon.

Priest Rapids Hatchery 2018 Updates – Todd Pearsons indicated that the hatchery program continues to focus on meeting the PNI target. They spawned Chinook last week and plan a second spawning this week. They currently have a sufficient number of males, but not females. Todd said 4.1 million eyed eggs will be sent to Ringold Hatchery for the Army Corps of Engineers program.

VI. Studies on the Reach

Tracy Hillman asked if there were any studies conducted in the Project Area that would benefit the FCWG/HRWG.

Geoff McMichael talked briefly about the predator abundance work he conducted with others between Priest Rapids and McNary dams. Geoff said they used mark-recapture techniques to estimate the abundance of walleye, smallmouth bass, and northern pikeminnow. They were able to get sufficient recaptures of smallmouth bass to generate an estimate of bass numbers. He added that bass are clearly the most abundant predators on the reach.

Geoff also indicated that they have a proposal into the PSC Northern Fund that will evaluate metrics of growth in otolith samples of natural-origin recruits to test the hypothesis that early freshwater growth of Hanford Reach Fall Chinook salmon is related to adult spawner and/or subsequent juvenile abundance (density dependent effects). The project will determine whether the prior-year adult escapement and/or pre-smolt abundance of juvenile fall Chinook salmon in the Hanford Reach is related to early freshwater growth in these fish. This study provides a unique opportunity to use preexisting otolith microchemistry analysis and new samples to determine whether juvenile freshwater

rearing habitat carrying capacity may be limiting the growth of juvenile fall Chinook salmon on the Hanford Reach.

Lastly, Geoff indicated that he has submitted a proposal seeking funds to evaluate the effectiveness of manipulating McNary reservoir elevations on reducing predators that prey on fish important to the Southern Resident Killer Whale (SRKW) population. The intent is to use reservoir elevations to reduce recruitment of walleye and smallmouth bass, which prey on juvenile fall Chinook. Adult fall Chinook are an important prey item for SRKW. Reservoir elevation manipulation would primarily target walleye larvae. The goal is to reduce walleye larvae survival by increasing velocities and reducing water temperatures where larvae rear. In addition, manipulating reservoir elevations may reduce smallmouth bass recruitment by changing velocities and depths during bass spawning. Reducing the number of predators that prey on juvenile fall Chinook may increase the number of adult fall Chinook, which are an important component of the diet of SRKW.

VII. Administrative Items

Members asked if Grant PUD could provide a website where FCWG/HRWG documents (e.g., Annual Reports) can be downloaded. Presently, members cannot find the final annual reports on the web. Peter Graf said Grant PUD has a new website (GrantPUD.org) and it is possible FCWG/HRWG documents can be placed there. Alternatively, they may go to a SharePoint and members with a Username and Password will be allowed access to FCWG/HRWG documents. Peter said he will look into this and let members know where and how to access FCWG/HRWG documents.

VIII. Next Meeting: The FCWG will next meet on Tuesday, 2 April 2019.