2019 ANNUAL FISHWAY STATUS REPORT

THE DALLES DAM

Date: January 2020
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INTRODUCTION

The Dalles Dam has specific requirements for Columbia River fish passage that are specified in the annual Fish Passage Plan. The Dalles Dam has two fish ladders for upstream adult fish passage, as well as an ice trash sluiceway and spillway used for downstream steelhead kelt and juvenile fish passage. The following document is a summary of all fish related activities that occurred at The Dalles Dam in 2019. In addition Northern Wasco Co PUD has a turbine that supplies auxiliary water to the north fishway, which has a complete juvenile bypass system. Information on this systems operation can be acquired through Pacific States Marine Fish Commission monitoring report.

FISHWAY OPERATING SCHEDULE

The following information includes fish passage system operation for calendar year 2019. Total length of time for annual fishway outages can be determined by referring to previous years' annual reports. These fishways were closed or dewatered for maintenance when they were not in operation.

East Adult Fishway

Jan 1 – Jan 16	Dewatered for winter maintenance
Jan 17 - Feb 8	AWS backup open
Feb 8 – Mar 21	AWS backup closed for vibration
Mar 21 – Mar 31	AWS backup open for second time
Mar 31 – Apr 2	AWS backup closed for flooding
Apr 2 – Apr 8	AWS backup open
Apr 8	Fish units return to service?AWS backup closed
Dec 3 – Dec 31	Dewatered for winter maintenance
Aug 7	Attraction water off half day for required ROV grating inspection

North Adult Fishway

Jan 1 – Jan 21	In full operation with attraction water
Jan 21 – Feb 7	Dewatered for annual maintence
Feb 7 – Dec 31	In full operation with attraction water
Aug 7	Attraction water off half day for required ROV grating inspection

Ice/Trash Sluiceway (Juvenile)

Jan 1- Feb 28	End gate closed
Mar 1 – Mar 31	In service with 4 sluice gates open
Apr 1 – Nov 30	In service with 6 sluice gates open
Dec 1 – Dec 16	In service with 4 sluice gates open
Dec 16 – Dec 31	End gate closed

Spillway

Jan 1 – April 9	Closed, all gates on seal
April 10 – Aug 31	Variable spill
Sept 1 – Dec 31	Closed, all gates on seal

DEWATERING FISH SALVAGE DISCUSSION

Efforts are always made to prevent fish mortalities. However, when mortalities occur, procedures are analyzed to determine how to correct for future dewaterings. Four lamprey mortalities were found atop lower east ladder diffuser grating days after the dewatering. Removal of lamprey from this area is not feasible to the extent of the area below grating. One chinook adult mortality was found at the south entrance coming from a large residual pool. Multiple attempts are used to remove fish from this area and blockers are installed to prevent fish from coming out afterwards. Efforts will be made to add height to the blockers to prevent fish from jumping over.

THE DALLES DAM NAVLOCK DEWATERING RESULTS

No Fish were found.

FISHWAY DEWATERING PROCEDURES

Dewatering fishways provides the best opportunity for maintenance and inspection. To dewater the fishladders, exit bulkheads are installed and the ladder is allowed to drain. Entrance bulkheads are installed and dewatering pumps operated to dewater all areas of fishways below tailwater elevation. Fisheries personnel enter these areas to salvage trapped fish when water levels allow entry. Fish are pushed toward tailwater or captured. Captured fish are transported to forebay or tailwater, depending on location, fish species, age class and stress levels. A follow up inspection is made to capture any missed fish. Efforts are made to provide continual water supply during the entire operation to reduce fish stranding and stress. Fishway areas that cannot be dewatered are inspected by ROV underwater camera.

THE DALLES DAM FISH LADDER DEWATERING RESULTS

Key; adult=a, juvenile=j, carp=cp, catfish=ca, sculpin=sp, shad=sh, small mouth bass=smb, crappie=cr, pikeminnow=pm, whitefish=wf, redside=rs, large scale sucker=lss

Date	Event	Chinook	Steelhead	Sockeye	Coho	Lamprey	Shad	Sturgeon	Other	Comments	Morts
1/23/2019	N upper	3j	0	0	0	12a	0	1	0		0
12/2/2019	E upper	0	16j	0	0	0	234	0	0		
12/10/2019	E lower	1	2a, 2j	0	0	37a, 4j	0	2a,2j	0		2 sturg

MAINTENANCE ACCOMPLISHMENTS AND PLANS

1) Two expansion joints in east ladder repacked with oakum fiber.
2) East exit weir 157 brake failed fall 2019. New brake will be installed prior Feb 2020.
3) All entrance weir composite wheel replacement of existing stainless wheels to be completed this season. Rehab entrance weir lifting beams to be assessed.
4) Diffuser valve status and long term planning continues. South valves accessed and 2 of 4 failed valves repaired for operation.
5) East count station window brush replaced. Failed drive couplers replaced mid season.
6) All east exit weirs gearbox seals and couplers completed.
7) New composite wheels installed on weirs 156 and 157. Weirs 154 and 155 in progress.
8) Two of 6 collection channel dewater pumps motors replaced awaiting install. Two operating collection channel pumps had low output and will be investigated and 1 remains failed and will be pulled for repair.
9) North fishway rock wall reinforcement repair alternatives developed. Awaiting funding. Vegetation removal from walls continues. Goats used with some success.
10) South channel vegetation removal from channel walls completed. Goats used successfully on edge of channel with some success.
11) New fishway entrance and exit weir automation assembly started. Install of sensor brackets for east entrance complete. Assembly of PLC boxes to start Jan 2020. Will have operable system in place for east entrance spring of 2020.
12) Powerhouse avian line shock hazard mitigation complete.
13) North exit debris boom damaged by high winds. Repair underway for install by Mar 2020.

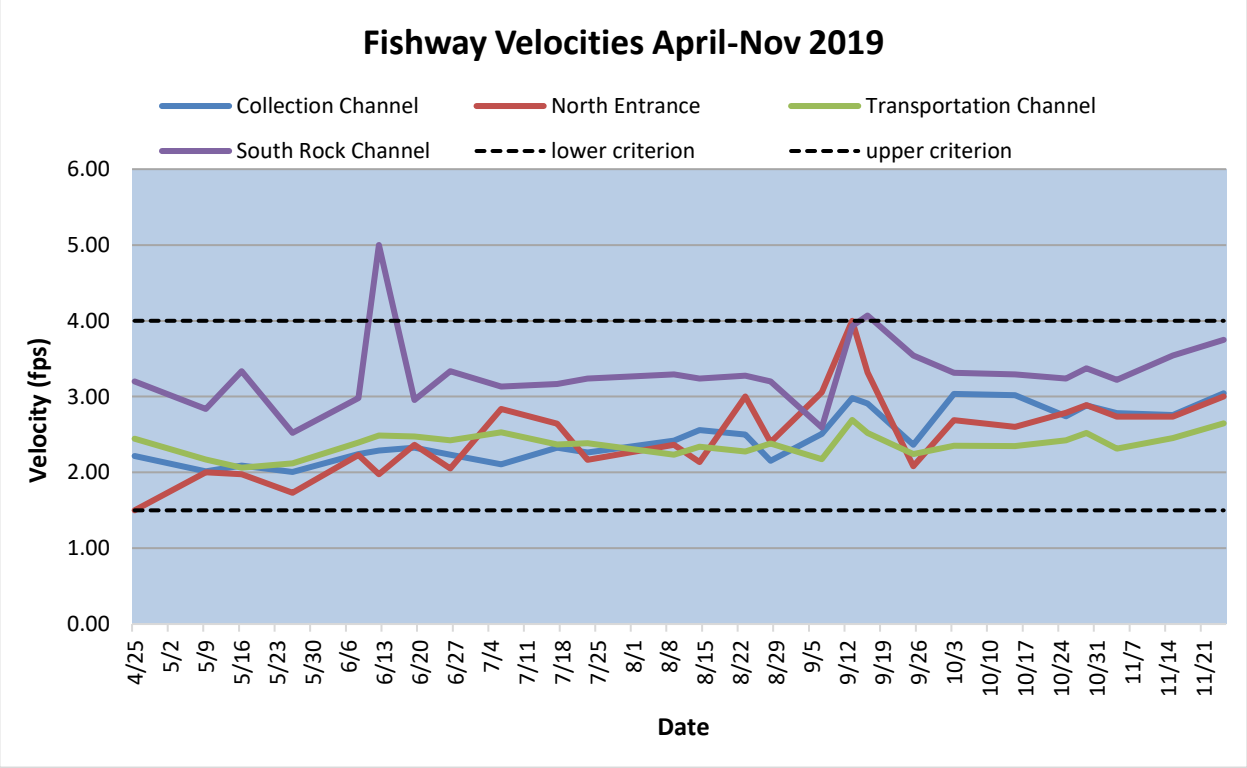
Inspection Discussion

Extensive Fish Unit Breaker replacement schedule delays combined with 2 AWS operation failure resulted in no means to operate east fishway within criteria. This resulted in the higher than normal number of entrance OOC.

Fishway Inspection Criteria Comparison Chart						
	2019		2018		2017	
The Dalles Dam	Total # OOC	%	Total # OOC	%	Total # OOC	%
Number of inspections	882		871		848	
NORTH FISHWAY						
Exit differential	0.00	0.00	0	0.000	0	0.000
Count station differential	12	1.36	0	0.000	0	0.000
Weir crest depth	2	0.23	0	0.000	0	0.000
Entrance differential	0	0.00	1	0.115	2	0.240
Entrance weir N1	0	0.00	0	0.000	5	0.590
Entrance weir N2	0	0.00	0	0.000	1	0.120
PUD Intake differential	17	1.93	6	0.007	79	9.320
EAST FISHWAY						
Exit differential	0	0.000	0	0.000	6	0.710
Removable weirs 154-157	39	4.420	27	3.100	26	3.070
Weir 158-159 differential	11	1.250	33	3.789	10	1.180
Count station differential	0	0.000	0	0.000	10	1.180
Weir crest depth	8	0.910	15	1.722	11	1.300
Junction pool weir JP6	0	0.000	0	0.000	4	0.470
East entrance differential	81	9.180	1	0.115	20	2.360
Entrance weir E1	7	0.790	0	0.000	4	0.470
Entrance weir E2	65	7.370	0	0.000	21	2.480
Entrance weir E3	59	6.690	0	0.000	9	1.060
Collection channel velocity	1	0.110	0	0.000	0	0.000
West entrance differential	119	13.490	1	0.115	7	0.830
Entrance weir W1	113	12.810	1	0.115	12	1.420
Entrance weir W2	114	12.930	5	0.574	13	1.530
Entrance weir W3	0	0.000	0	0.000	5	0.590
South entrance differential	114	12.930	1	0.115	28	3.300
Entrance weir S1	118	13.380	0	0.000	14	1.650
Entrance weir S2	117	13.270	4	0.459	5	0.590
JUVENILE PASSAGE						
Sluicegate operation	7	0.790	11	1.263	10	1.180
Turbine trash rack drawdown	0	0.000	0	0.000	0	0.000
Spill volume	0	0.000	0	0.000	148	17.450
Spill Pattern	0	0.000	0	0.000	97	11.440
Turbine Unit Priority	187	21.200	30	3.444	266	31.370
Turbine 1% Efficiency	1	0.110	3	0.344	8	0.940

WATER VELOCITY

Fishway channel water velocities were measured weekly during Adult Fish Passage Season (Mar 1- Dec 1) beginning in April due to delayed FU start-up, resulting in partial east fishway closure. Floats were timed through all fishway channels that are supplemented by auxiliary water and results were provided in the project weekly fishway status report. Criteria velocities of 1.5 to 4 fps were generally maintained throughout the fish passage season, with a few intances of velocities >4 fps in the South Rock Channel. Velocities were not always taken at unit 22 due to turbulence preventing float tracking. Velocity is generally slower from junction pool to unit 21. Past University of Idaho analysis did not reveal fish passage delays in this area.

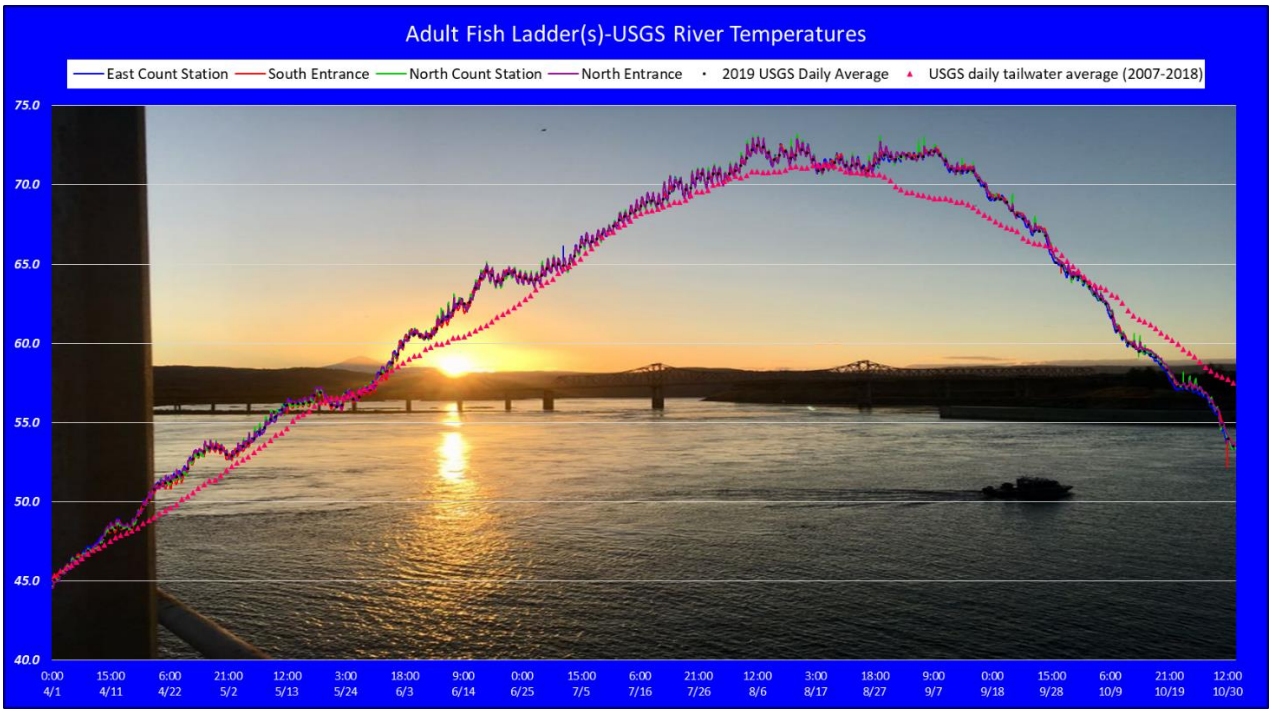


GATEWELL/INTAKE TRASH RACK DEBRIS MONITORING

Gatewell drawdowns are a frequent measurement of water level between forebay and gatewell used to determine turbine intake trashrack debris loads. As in previous years, all maintained well within the criteria limit (+ or – 0.5'). The Dalles dam is unique to other dams in that gatewell drawdown measurements have not been found out of criteria for past 26 years, nor has gatewell debris been a problem. However the Fish Passage Plan requires that we periodically check for drawdown. Seven juvenile salmonid mortilities were recorded during passage season; MFRs were filed accordingly.
Gatwell orifices are being permanently closed due to the absence of screens and conservation of water. This is done as units become available and workload allows. Forty two of 70 orifices have been closed.
Intake trashracks are ROV checked twice yearly per Fish Passage Plan, for debris accumulation.

WATER QUALITY

Water clarity was read by secchi dish at the count stations. Water clarity data is not included in this report due to its questionable accuracy, but can be obtained on request. Temperature monitoring with data loggers in each fishway is provided weekly in the fishway status reports. Additional monitoring will be done to determine differences from upper to lower ladder. The following graph is a compilation of weekly readings collected by data loggers in the east and north fishladders. Readings are taken immediately upstream of the count stations and the lower entrance area of each ladder. Lower Columbia River Temperature Report



CALIBRATION

Calibration (comparing digital display and staff gauge readings vs tape measure or Fluke laser) checks on all water level stillwells and weirs done weekly to assure accuracy. Maintenance is notified when they are found off by more than + or -0.3'. Human error and weather conditions are factored into the results and sometimes leave voids in data table below. In 2019 the repairs to Fish Unit breakers and the Alternative water systems (AWS) required performing calibrations earlier in the year to account for AWS fluctuations at openings. Requests for maintenance by TDE to adjust calibrations were made each week but were not always addressed due to staff shortages and work load.

The Dalles	3/26/19	4/11/19	4/15/19	4/22/19	4/29/19	5/2/19	5/13/19	5/22/19	5/29/19	6/3/19	6/12/19	6/19/19	6/27/19	7/2/19	7/10/19	7/17/19	7/22/19	8/5/19	8/15/19	8/20/19	8/26/19	9/6/19	9/13/19	9/16/19	9/26/19	10/1/19	10/7/19	10/15/19	10/21/19	10/28/19	11/6/19
no criter	0.18	0.95	0.95	0.9	0.9		0.92	1.2	0.8	0.9	0.7	0.5	0.55	-0.5	-0.1	0.4	0.4	0.3	0.4	0.4	0.4	0.2	-0.3	0.9	1.2	1.3	0.9	0.9	0.8	1	1.1
E2	0	-0.2	-0.2	0	0.1		0.2	0.2	0.2	0.05	0.3	0.3	0.3	0.3	-0.2	0.25	0.3	0.2	0.3	0.3	0.3	0.3	0.05	0.3	0.2	0.2	0.3	0.2	0.2	0.3	0.1
E3	0.1	-0.1	-0.1	0.1	0.4		0.25	0.2	0.2	0.05	0.3	0.3	0.3	0.3	-0.1	0.25	0.3	0.3	0.3	0.4	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1
W1	-0.05	-0.28	-0.08	-0.28	-0.08		-0.28	-0.08	-0.18	-0.28	-0.08	-0.28	-0.08	-0.08	0.12	-0.08	0.02	-0.08	-0.08	-0.18	0.12	0.12	-1.08	-0.48	-0.68			-1.78	-0.88	-0.98	-3.18
W2	-0.08	0.52	0.62	0.22	0.42		0.39	0.42	0.42	0.32	0.82	0.92	0.69	0.12	0.3	0.07	0.22	0.02	0.27	0.02	0.12	0.12	0.02	0.72	-0.28	-0.25	-0.28	-0.28	-0.28	-0.48	-0.28
W3 closed	-0.08	0.82	0.82	0.92	0.77		0.74	0.72	1.02	0.82	0.72	0.82	0.79	-0.08	0.02	0.12	0.12	0.12	0.22	0.02	0.02	0.12	-0.68	0.02	-0.08	-0.26	-0.18	-0.28	-0.28	-0.18	-0.08
S1	-0.35	0.4	0.3	0.5	0.6		0.57	0.3	0	0.5	0	-0.2	-0.3	0.2	-0.2	-0.3	-0.2	-0.3	0.1	-0.3	-0.1	-0.1		-0.2	-0.2	-0.3	-0.1	0.2	-0.3	-0.3	-0.3
S2	0.15	0.75	0.65	1.4	0.2		0.82	0.6	0.3	0.8	0.1	0	-0.3	0.2	-0.3	-0.3	-0.3	-0.2	-0.1	-0.2	0	-0.3		-0.2	-0.2	-0.3	-0.1	0.1	-0.4	-0.2	-0.3
N1	0.1	0.3	0.3	0.05	0.2			0.3	0.3	0.15	-0.02	0.29	0.24	0.17	0.22	0.27	0.26	0.2	0.3	0.3	0.3	0.2		0.17	-0.25	-0.2	0.15	-0.21	0.1	0.14	0.1
159	**0.3**	**0.2**	**0.2**	**0.3**				**0.3**		**0**	**0.3**	**0**	**0**	**0.3**	**0**	**0**	**0.1**	**0.1**	**0**	**0**	**0.2**	**0.1**	**-0.1**	**0.1**	**0.5**	**0.1**	**-0.1**	**0.1**	**0**		**0.1**
158	**0**	**-0.1**	**-0.1**	**0**				**0.2**	**0.3**	**-0.3**	**0**	**0**	**0**	**0.1**	**0**	**-1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**0**	**0**	**-0.1**	**0**	**0**	**-0.1**	**-0.1**	**0.1**	**-0.1**		**0**
E Chan	-0.1	0.1	0.1	0.1	0.3		0.3	0.3	0.3	0.3	-0.2	0	-0.3	-0.45	-0.65	0	-0.3	-0.4	-0.2	-0.3	-0.2	-0.3	1.8	-0.6	0	0	-0.2	0	-0.1	0.1	0
E TW	0.2	-0.3	-0.3	-0.6	-0.5	-0.5	-0.4	-0.5	-0.5	-0.6	-0.6	0	-0.6	-0.3	-0.8	0.3	-0.3	-0.1	0.3	-0.3	0.15	-0.2	-0.5	-0.25	0.3	0.3	0.2	0.1	0.2	0.1	0.2
W Chan	0	0.15	0.15	0.2	-0.1		-0.05	-0.1	0.1	0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.1	-0.3	-0.4	-0.4	-0.5	-0.3	-0.35	-0.8	-0.7	-0.4	-0.4	0	-0.3	-0.3	-0.1	-0.1
W TW	0.1	0	0	-0.1	-0.1	0.2	0.1	-0.1	0.1	-0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.3	-0.1	-0.1	-0.2	0	-0.2	-0.5	-0.1	0	-0.4	-0.1	-0.1	-0.4	0.0	-0.5
S Chan	0.2	0.1	0.1	-0.3	0		-0.03	-0.2	0	-0.1	0	-0.1	-0.25	0.1	-0.1	-0.1	-0.1	0.1	-0.1	-0.3	-0.1	-0.2	-0.1	-0.1	-0.1	-0.2	0.2	-0.2	-0.3	0.1	0
S TW	0.2	-0.2	-0.2	0.2	-0.3		0	0	0.2	0.1	-0.35	0.7	-0.3	-0.3	0.3	0.4	-0.2	0.1	-0.1	0.1	0.1	0.1	0.1	0.2	0	0	0.3	0.2	0.1	-0.1	0.3
N Chan	-0.1	0.12	0.12	-0.06	0			0.2	0.04	0.0	-0.4	-0.11	-0.05	-0.15	-0.06	-0.1	-0.1	0.1	0	-0.2	-0.1	-0.1	-0.32	-0.2	-0.1	-0.2	-0.17	-0.16	-0.2	0.0	-0.33
N TW	0.3	-0.2	-0.2	0.1	0.1			0.2	0.28	-0.1	-0.36	0.46	-0.02	0.13	0.21	0.15	0.4	0.2	-0.5	0.3	0	0.2	-0.49	0	0.3	0.3	0.04	0.05	0.1	0.2	-0.09
E FB				0.6					0.3					0.1	-0.2			0			-0.2			0	-0.3			0			-0.1
N FB								0.2	0.2		-0.1				0.1			-0.1			-0.1							-0.1			-0.3

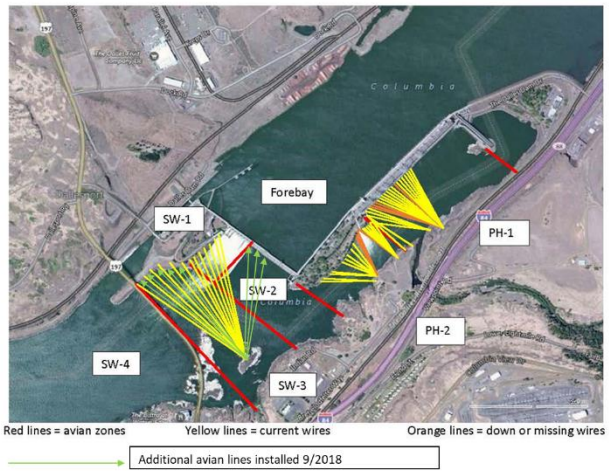
CALIBRATION DISCUSSION

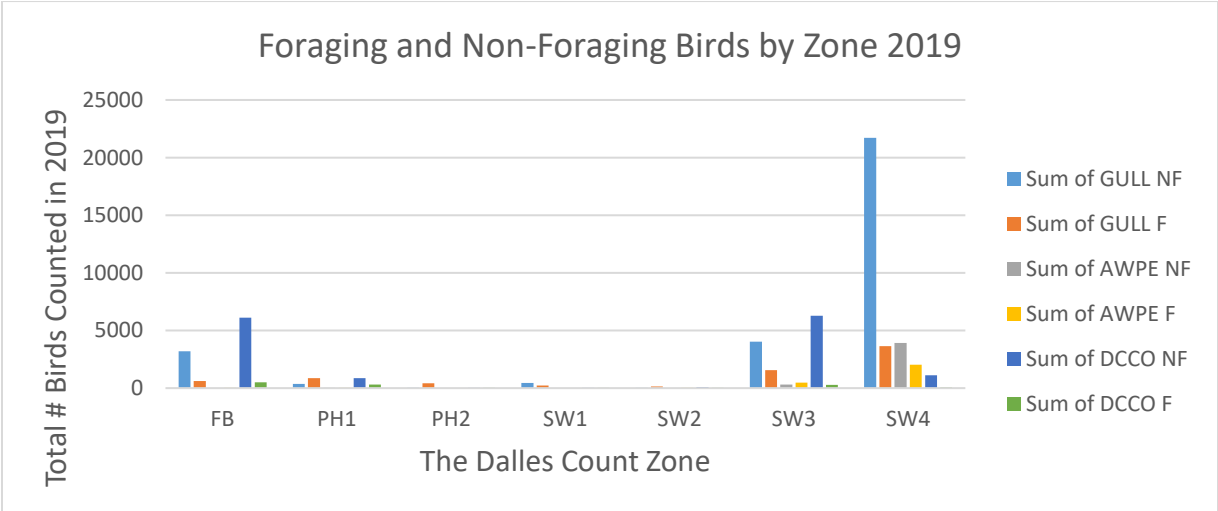
Out of calibration readings that require maintenance are indicated by highlight. Out of calibration that was likely the result of high tailwater was highlighted. 2019 had 46 out of calibration readings during the fish passage season. 2018 had 63 out of calibration events, less than 2017 results which were much higher than prior years with 127. This is compared to; 2016=32, 2015=24, 2014=22 and 2013=28. Allowances were made for out of calibrations gates so that at no times would entrances be out of criteria > 8' openings. Maintenance was notified for needed adjustments as soon as possible but inconsistencies in data sometimes led to delays. We will also be asking TDE to do one calibration per month and perform maintenance on their schedule in 2020. Fisheries staff will do calibrations on all other weeks, so as to standardize procedures with TDE. A new automation system will be installed during 2020/2021 for east fishway entrances and exit. This should reduce the number of calibration issues.

AVIAN PREDATOR ABATEMENT

The three main piscivorous birds are oberved at The Dalles during juvenile salmonid migration are California Gulls, Double Crested Cormorants and American White Pelicans. The United States Department of Agriculture (USDA) was contracted to provide avian hazing abatement via pyrotechnics from April 16 – July 31 for Gulls and Cormorants only. Hazers were present during all daylight hours (~06:00-20:00). Generally, hazing by boat occurred the first half of the day (8hrs), then hazing continued from the peninsula downstream of the Dalles bridge (SW4, 6 hrs). There were periods of time that hazers could not use pyrotechniques due to barges and/or heavy wind days. USDA hazers concentrated specifically on zones upstream and downstream of the US-197 bridge.

Avian lines are also installed and maintained where feasible. See figure below for avian line locations. Lines were added (in green) in 2018 for more effectiveness through variable spill ranges. Three lines in SW3 were lost during the 2019 season. This will be monitored for predation changes.



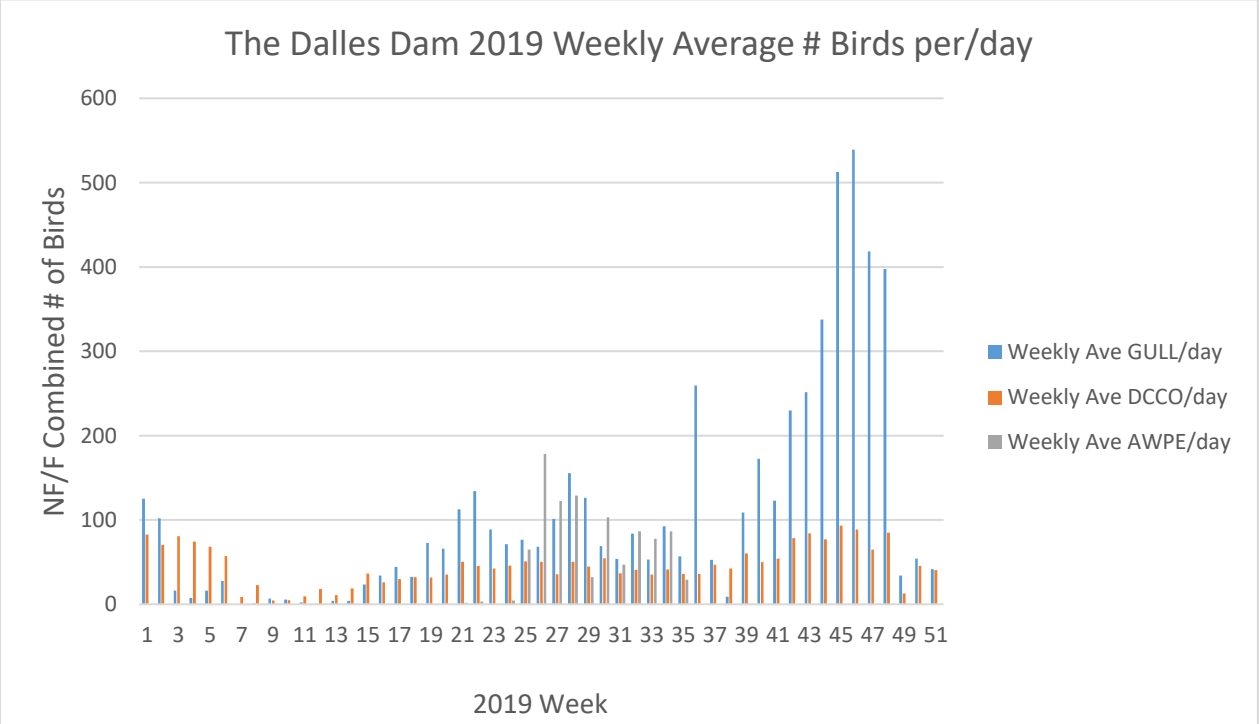


AVIAN DISCUSSION

Project fisheries staff provided daily avian counts for the entire year. The highest bird counts were on the spillway side of the dam downstream of The Dalles US-197 bridge (SW4). Gulls foraged heavily in this zone. The majority of resting birds were cormorants in the forebay (FB) often perched on the electrical transmission towers near the Washington shore and pelicans perched on the rock islands downstream of the bridge (SW4). Daily counts were highly variable, but compared to the 2015 daily average observed during fish passage season (4/1-10/31), mean gull and

cormorant numbers are within the normal range (98.76 and 44.82, respectively; normal range: 11-142 for gulls, 7-80 for cormorants), but pelicans are showing increasing numbers (2019 mean = 31.92; normal range: 0-10). Normal ranges are calculated as the 2015 mean (the earliest year for which we have complete data) ± standard deviation. Compared to 2018, daily averages during passage season increased 15% for gulls and 136% for pelicans, but decreased 27% for cormorants. Other birds included grebes, mergansers, and eagles. Grebes were observed in the summer along with pelicans but the vast majority of grebes and mergansers were in the fall and winter months during the juvenile shad outmigration. There continues to be high numbers of Bald Eagles overwintering in Westrick Park, feeding primarily on post-spawn adult shad. Previous studies have shown no impact with avian lines. Refer to Fisheries Field Unit "Evaluation of Interaction Between Overwintering Bald Eagles and the Avian Line Array at The Dalles Dam 2013" report for further details.

(4/1-10/31)	**Daily GULL**	**Daily DCCO**	**Daily AWPE**
2015 average	76.91	44.00	1.98
2016 average	73.51	51.14	21.73
2017 average	70.40	44.37	4.82
2018 average	85.84	61.76	13.55
2019 average	98.76	44.82	31.92

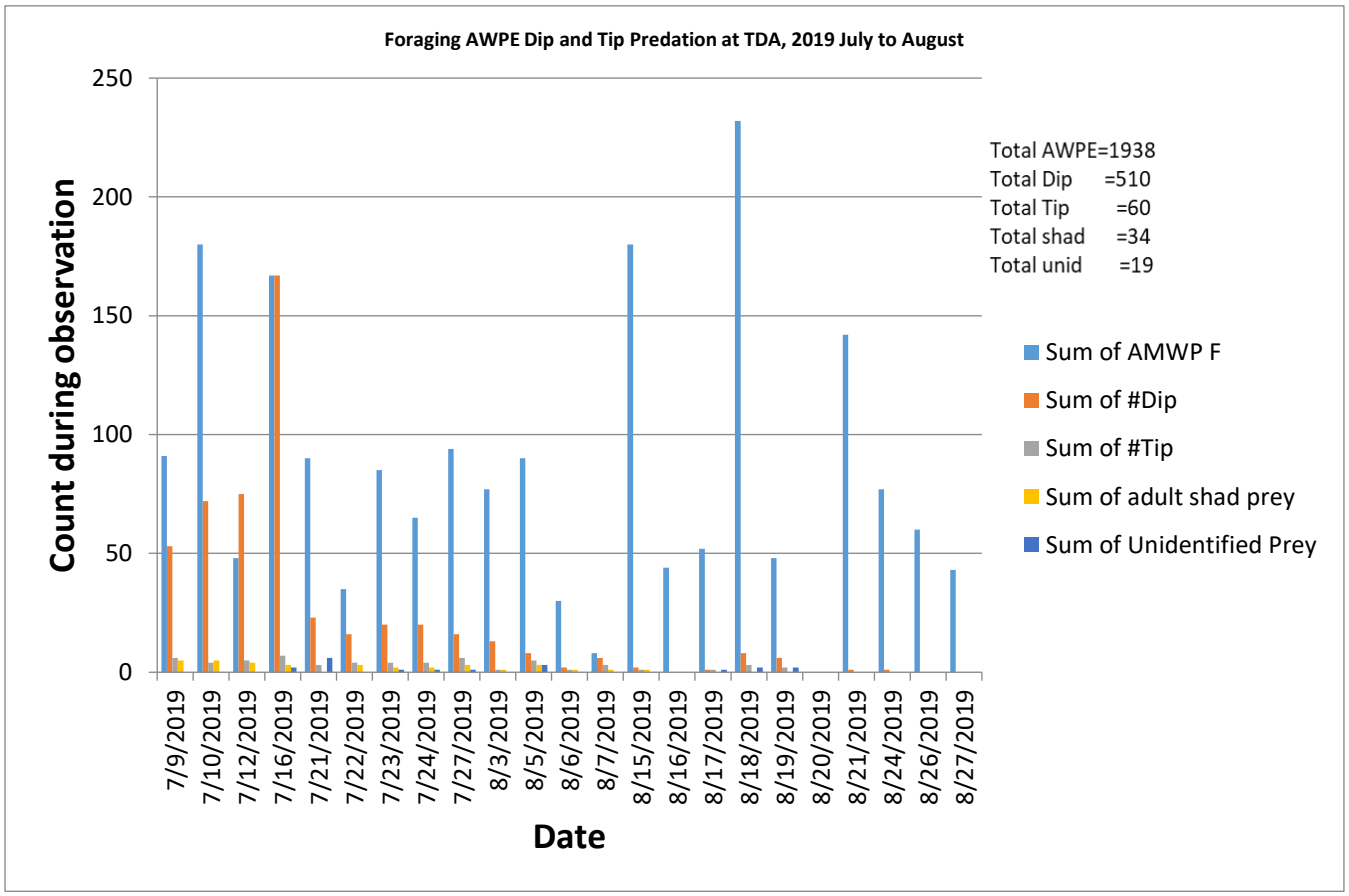


WHERE ARE ALL THOSE GULLS COMING FROM?

Miller Island is a well known nesting colony of primarily California Gulls and to lesser extent Ringbill Gulls. Recent PIT recovery efforts from the island has revealed substantial predation on ESA listed salmonid species. There is a high likelihood that this predation occurs below The Dalles and John Day.

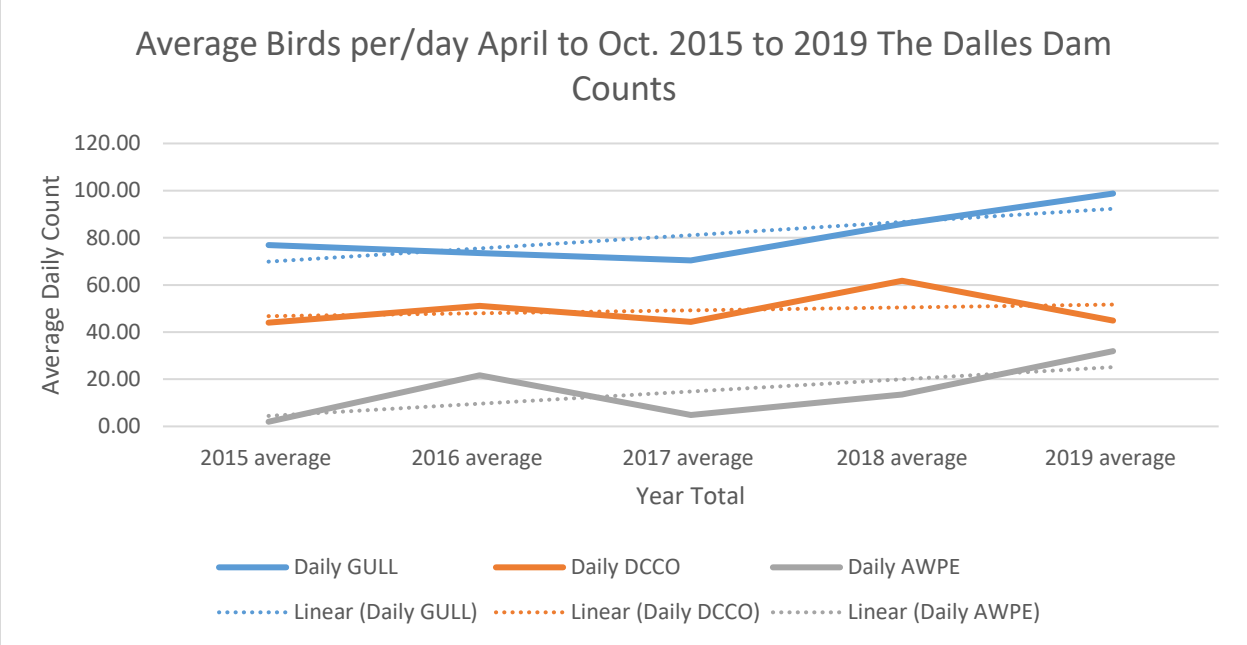
Efforts are being made to increase the avian abatement success within agency guidelines. Avian lines were maintained, hazing schedule is scrutinized and other means of abatement, such as green laser are being tested. The use of lethal removal at the dam continues to be discussed as an option for Portland district as it has for many years.

Total numbers of American White Pelicans (AWPE) have steadily increased. In an effort to determine Pelican prey, dip and tip counts were taken in 2019. Preliminary data indicates they are likely targeting adult shad mortality during most of the juvenile salmon passage season. Its possible that pelicans may not pose a significant threat to salmon. Further diet sampling by wildlife managers (not Corps of Engineers) is needed for diet confirmation.



FURTHER DISCUSSION OF AGRILASER USE

Beginning in Jan. 2019 a demonstration use of a green light 500mW Agrilaser was begun focusing on hazing resting GULLs and Comorants (DCCO) at the Dalles dam. For various reasons this appears to have had limited effect on GULL with migratory birds quickly returning to project areas after Agrilaser use. Beginning in Sept. 2019 a more systematic approach to hazing GULL and DCCO was applied though the end of the year. The graph below shows the correlation in decline in the numbers of both foraging and non-foraging DCCO at the project over the salmon passage year (April to Oct.) 2019 compared through 2015. This apperars to reverse a trendline increase in the numbers of DCCO seen over the last 4 years. The numbers of GULL(Pyro and Agrilaser hazed) and AWPE(not hazed) continued to increase. Agrilaser use is continuing during the winter months 2019/2020 to deter breeding DCCO from nesting on forebay powerline towers.



FISH COUNTING

Visual fish counting was conducted 4/1/19 to 10/31/19 by Four Peaks Environmental and Science & Data Solutions. Counts were downloaded to the FPC website http://www.fpc.org/adults/Q_coeadultqueryforms.php.
Refer to Corps of Engineers 'Annual Fish Passage Report' 2019 for fish count and comparison to previous years.

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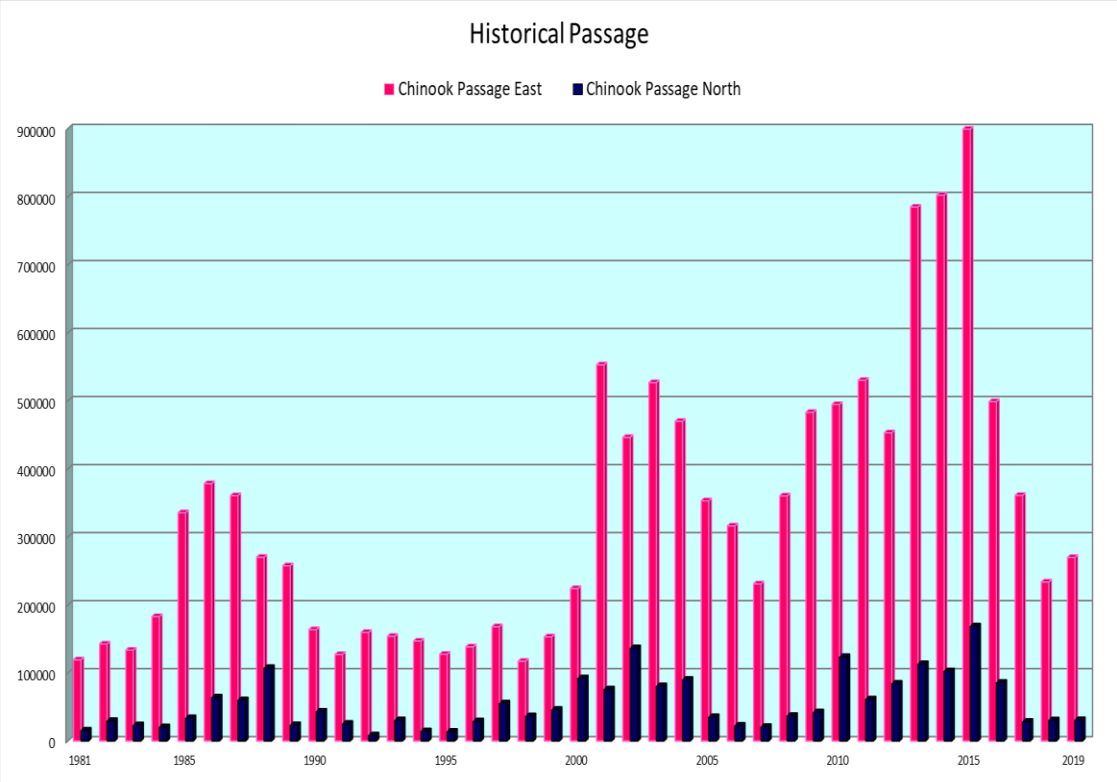
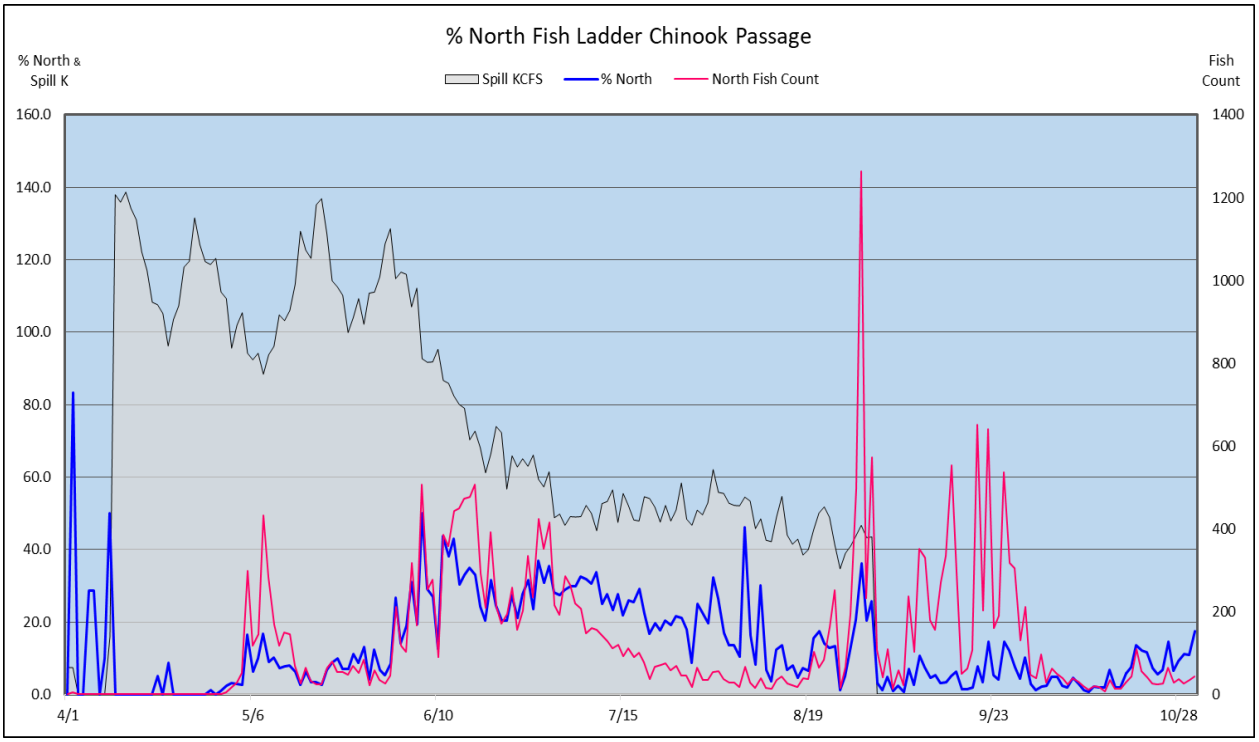


NORTH LADDER PASSAGE VS SPILL

Spill operation has been documented to affect north fishladder passage in the past years. In previous years spill >110KCFS tended to block salmonids from entering the north ladder. During late April and early May, this trend is apparent. It was again clearly demonstrated that with no spill, salmonids are not attracted to the north entrance area either; hence the drop in north passage immediately after spill stops. project hourly



Zebra/Quagga Mussel Monitoring

No *Dreissena* mussels were detected during USACE and PSU early detection monitoring throughout the Columbia River Basin in 2019. Monitoring was focused on water bodies with a high to medium likelihood of *Dreissena* mussel introduction and/ or establishment during the period of expected peak mussel spawning based on water temperature (July – September). Sampling also occurred in June and October to account for the uncertainty associated with predicting mussel spawning and water temperatures. The Dalles staff contributed 3 samples of the 128 basin wide samples in 2019. Refer to the PSU 2019 report for details 'Zebra and Quagga Mussel Monitoring in the Columbia River Basin by the U.S. Army Corps of Engineers and Portland State University in 2019

2019 Final Report, Wells and Sytsma, Miller.'

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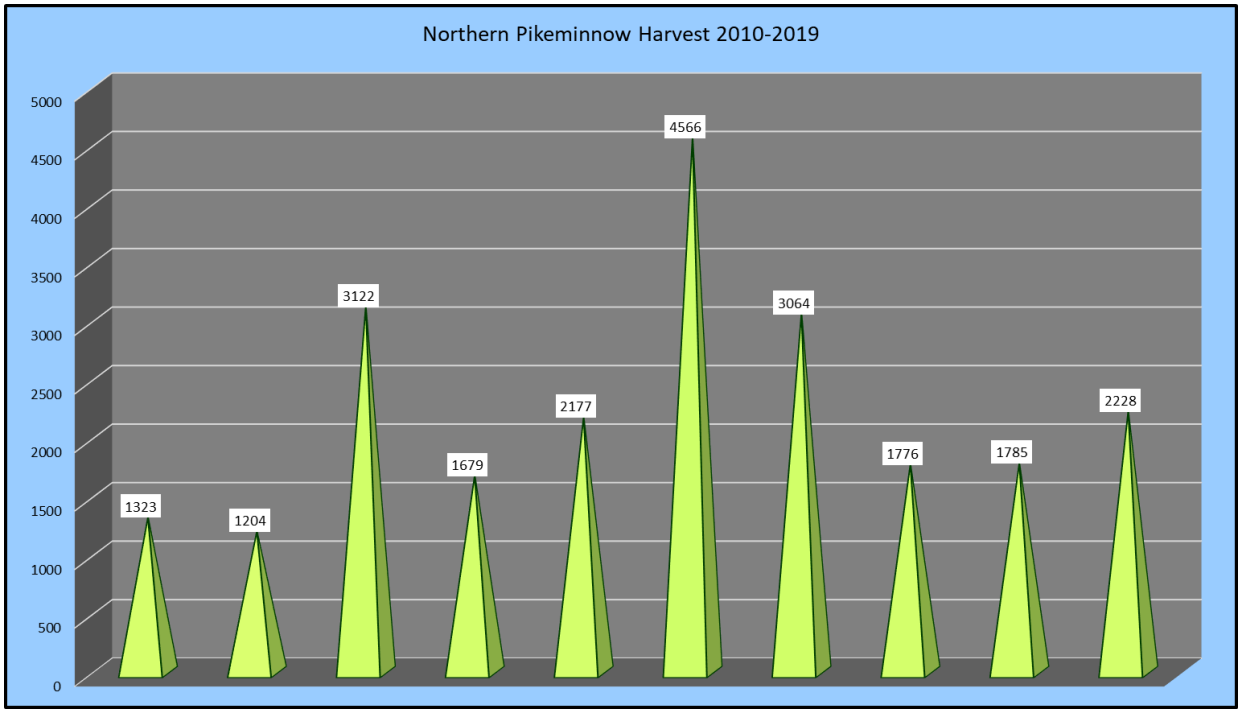
PIKEMINNOW ABATEMENT

Washington Dept Fish and Wildlife conducted hook and line dam-angling in support of the on-going BPA funded Columbia River Predator Control Program Dam angling from May through Oct 8, in conjunction with ODFW and PSMFC. A total of 1,785 northern pikeminnow >230mm were caught at The Dalles Dam. All angling occurred from powerhouse tailrace deck. The concern of catch and releasing a non-native predators for the past 3 years is still being raised through meetings with regional fish managers. Bass and Walleye made up ~5% of the total dam angling catch,which is much less than John Day Dams 25%. The states of Oregon and Washington classify invasive bass and walleye as game fish and have not agreed to including them in the dam angling harvest with native pikeminnow.

Graph coutesy of Paul Dunlop WDFW



SEA LIONS

No sightings have been made inside the fishways to date, but several have been in close proximity to entrances. The following is a log of the only sea lion sighting in 2019.

5/9/2019	1350	CSL	swimming	SW3, near Lone Pine village, moving upstream

FISHWAY VEGETATION PLAN

Vegetation removal is a priority to preserve the structural integrity of fishway channel walls,. During winter dewatering, structural crews and resource maintence crews removed large woody vegetation from south channel rock walls in the east fishway and the north fishladder. Goat grazing was used for these areas as well in spring 2019 to remove shorter vegetation, such as blackberry, english ivy, poison oak and other small shrubs growing in the fish channel. Both efforts were successful, but further work will be needed in the north fishladder in Feb 2020.

During the goat grazing contract for the north fishladder, the contractors goat herding dog fell into the fishladder. The project emergency response team stepped into action and used this opportunity as a training opportunity and successfully saved the dog. Future contracts may include more sure footed herding dogs.

RESEARCH

The following are a list of fish related research and contract personnel that were on site during the 2019 passage season;

4 Peaks – New fish counting contractors performed fish counts at the north and east fishways via count stations.

Oregon Dept of Fish and Wildlife –Captured, tagged, and collected biological data from northern pikeminnow as part of an evaluation of the Northern Pikeminnow Management Program.

Oregon Department of Fish and Wildlife and Fish Passage Center – Continued to provide once monthly fishway inspections of adult and juvenile systems.

Pacific States Marine Fish Commission – FERC required sampling at the Northern Wasco County PUD intake structure as per the Coorperative Agreement between Pacific States Marine Fisheries Commission and Wasco County PUD.

Pacific States Marine Fisheries Commission PTAGIS Information System – monitored Thin Wall PIT Tag detection system in The Dalles east and north count stations.

U.S. Dept of Agriculture – Provided avian hazing of piscivorous birds to reduce avian predation on juvenile salmonids May to August via pyrotechnics during juvenile passage season.

U. S. Geological Survey – Total Dissolved Gas (TDG) and water temperature monitoring.

CTUIR - Captured adult Pacific lamprey as part of the on-going project to restore lamprey to various tributaries. CTUIR worked with the Nez Perce and Yakama Nation to help with lamprey collection efforts. Yakama Nation was allocated 209, 189 for Nez Perce and 196 for CTUIR.

For the second and final year, the University of Idaho captured and released of adult Pacific lamprey in order to monitor upstream migratory movements outfitted with radio- and PIT-tags at Bonneville Dam. tagged lamprey for

testing lower entance flows 6/1 to 8/31. Entrances were opened and fish turbines were reduced in order to change from salmon to lamprey criteria. Conclusions point to no benefit for passage

For the second and final year, Portland district water quality section placed temperature data collection string in front of both ladder exits to look for cooler water gradients from the forebay to perhaps tap into this colum of cooler water due to envirnomental concerns of potential overheating summer ladder conditions. Temperature variation is minimal.

END OF REPORT
Approved by; Mike Colesar, Operations Project Manager, The Dalles Dam