

## Okanogan Adult Temporary Weir

### Objectives

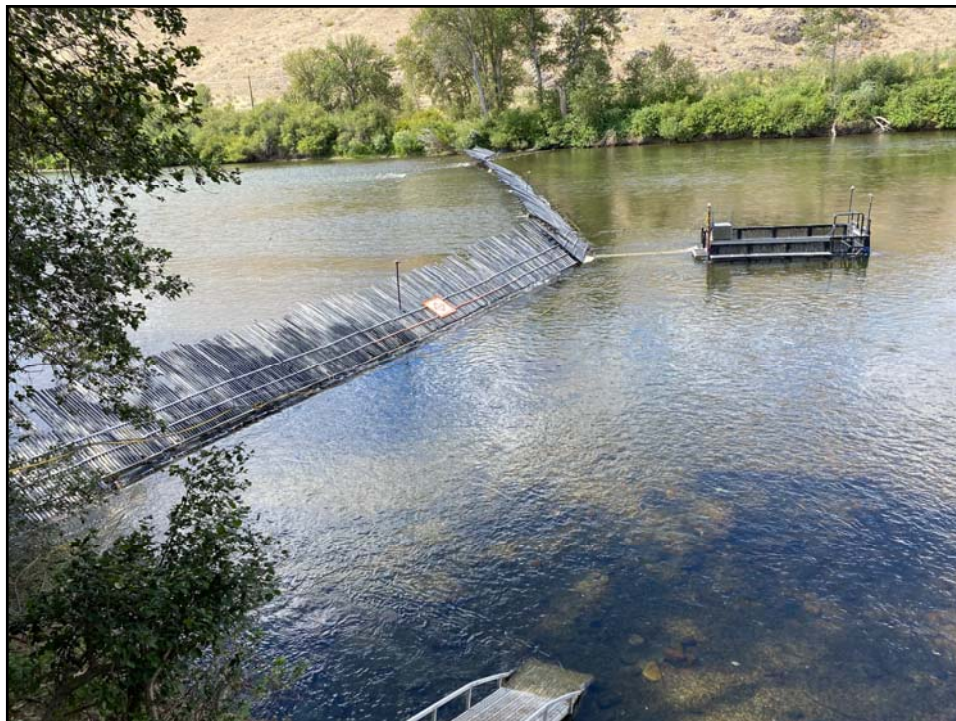
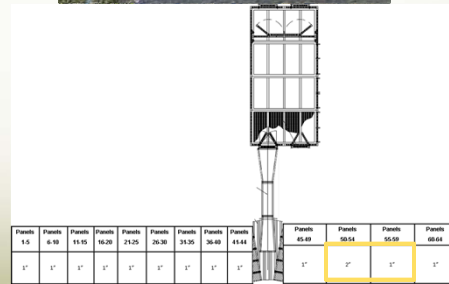
- Install early July or August, operate through September under allowable flow (< 3,000 cfs) and temperature (<22.5 °C) conditions
- Adult management tool for broodstock needs, meet pHOS (<30%) and PNI (> .67) target
- Refine trap configuration to meet the CJHP's biological and brood-take goals
- Remove HOR summer/fall Chinook fish; fish from this "adult management" activity are destined for tribal member ceremonial and subsistence purposes
- Collect late arriving natural-origin broodstock summer/fall Chinook and transport safely to the hatchery
- Document weir effects and conduct observations around vicinity of the weir for species composition, abundance, health, and timing to inform management decisions and future program operations

## 2021 Operation

- Deployed on August 2<sup>nd</sup> at 900 cfs flow @ Malott
- Completed August 10<sup>th</sup> with underwater video system
- Daily monitoring activities began following week
- Trapping began on August 18th
  - Trapped for 30 days
  - Ended on September 24th
- Configuration
  - River right- 1" picket spacings
  - River left- 1" picket spacings, set of (5) 2" picket spacings for passage, similar to previous years

## 2021 Configuration and Design

- Installed the accelerator chute again
- Installed a light bar and camera housing on west side trap and two in the chute
- Moved the trap downstream
- Did not install the Whooshh™ fish transport system for brood stock collection
- Used an aerial cable system for the weir video cables again

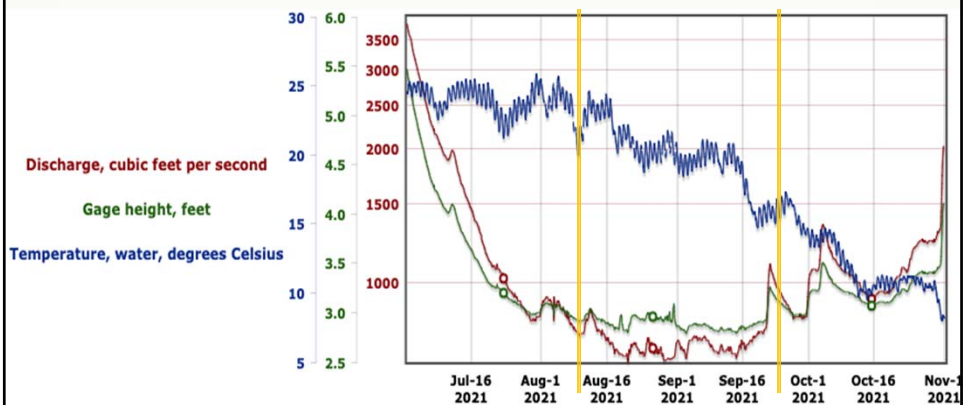


# Daily Monitoring Activities

- **Daily maintenance**- debris, algae removal, carcass removal, cameras, lights
- **Water quality:** temperature, dissolved oxygen, and turbidity
- **Water velocity and head differential\***
- **Direct observations** (estimates)
  - Tower- 2x-3x/day, 5 minutes, morning, afternoon, evening
  - Bank- about .8 river km downstream, 2x/day, 10 minutes
- **Mortalities**
  - Collected, assessed, biological information
    - No Chinook carcasses
    - 22 Sockeye
- **Underwater video review**
  - 2 cameras along the chute (1 DS, 1 US), 1 camera inside trap (west panel), 1 bird's eye camera on trap
  - Live monitoring to assist in daytime trapping

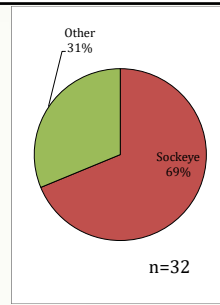
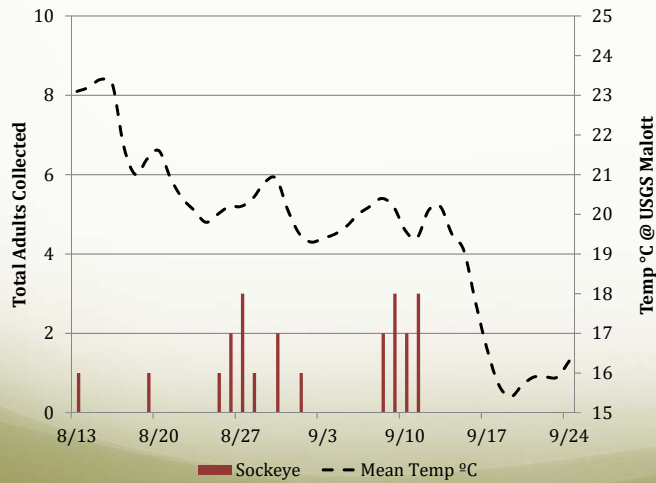


# Water Quality

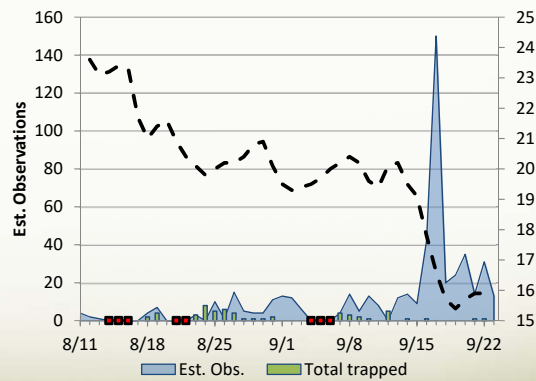




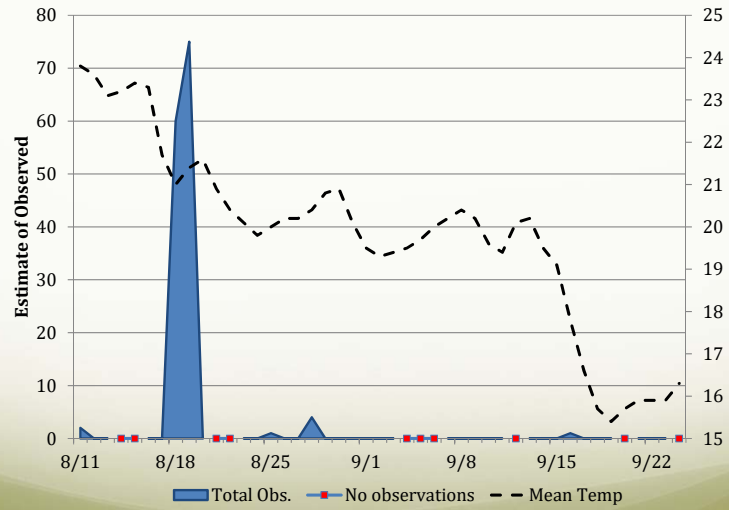
# Carcasses at the Weir



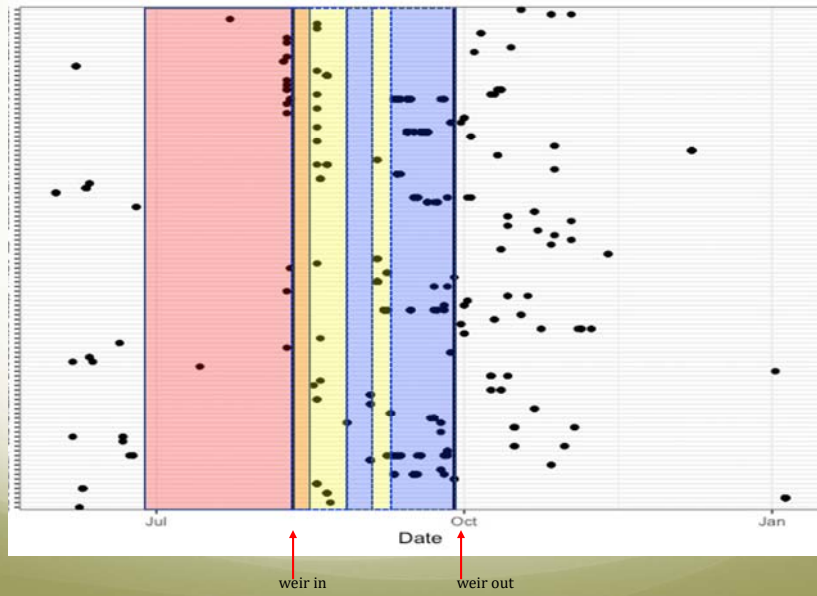
# Bank Observations



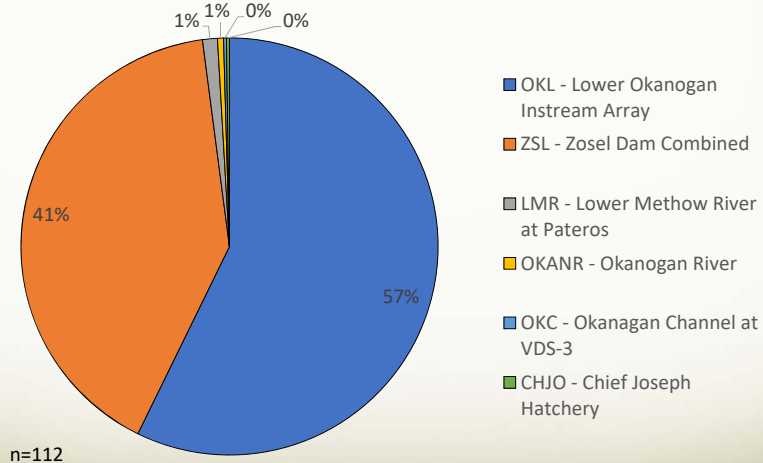
# Tower Observations



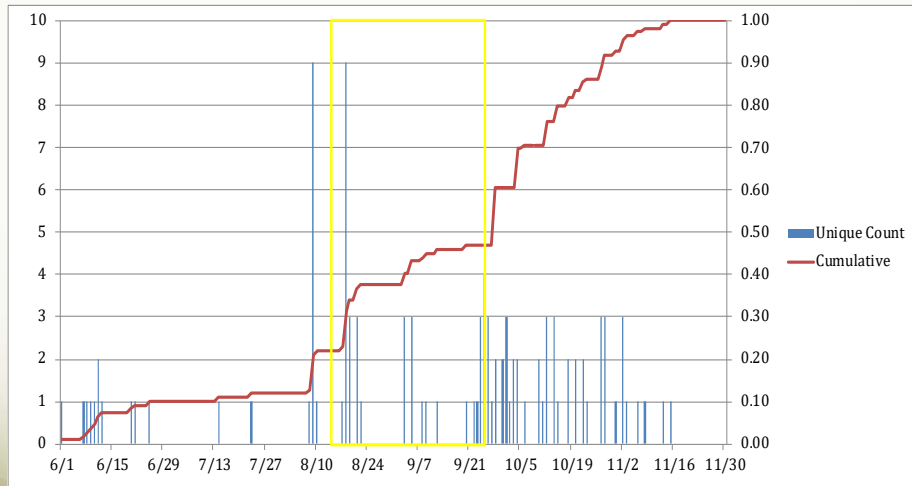
# OKL Array 2021



## Last Detection Site



## Last Detection OKL



## Trapping Operations

- Trapping began on August 18<sup>th</sup>, ended on Sept. 23<sup>rd</sup>
- 56 adult summer Chinook
  - 32 NOR released
  - 10 NOR brood
  - 14 HOR removed
  - 10 jacks
- 7 adult sockeye (mostly in August)
- 10 steelhead (6 ad present, 4 ad clipped)
- 8 coho in last week of trapping (all ad present)

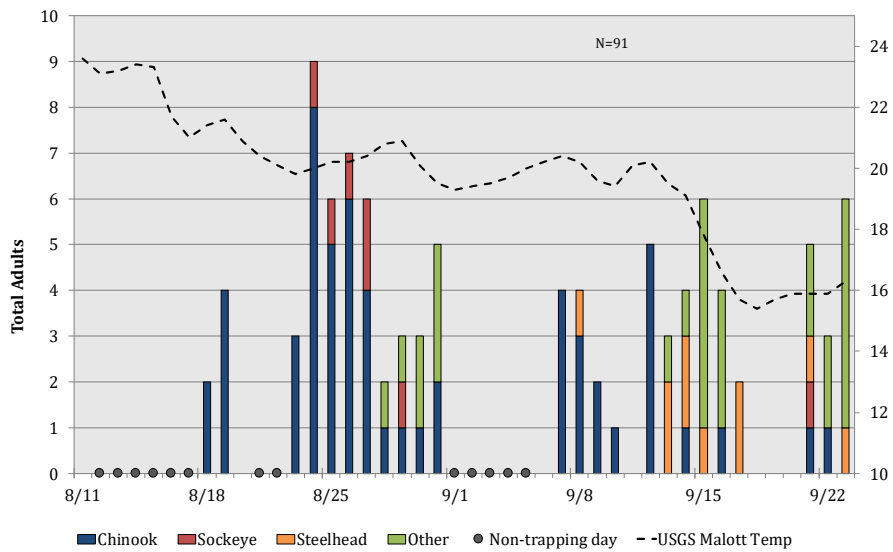


## Environmental Conditions

- Similar to 2020, algae was a major obstacle we had to overcome in August and early September
  - Required cleaning every 2 hours to prevent hydraulic head over the pickets and scouring
  - Maintenance physically demanding for staff- 1.5-2 hours of cleaning
    - Focused maintenance when fish not present around trap (12PM-6PM)
  - In order to operate under these conditions, requires rotating staff throughout the day
  - If unable to maintain low hydraulic head and scour, then must raise pickets and stop trapping
- If conditions continue annually then will limit our ability to trap and collect fish

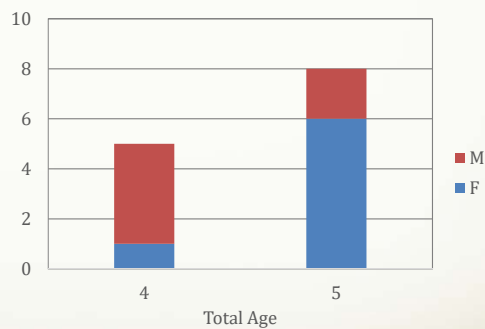


# Daily Trapped



# CWT Results- Weir Surplus

- 14 HOR surplussed
- 13 CWTs Extracted
  - 13 tags read
- 12 Recoveries from integrated summer releases (92%)
  - 9 from Omak Pond
  - 3 from Sim. Pond
- 1 recovery from Entiat





Survey Year	Chinook Adults Encountered in the Weir Trap		Chinook Spawning Escapement Estimates <sup>c,d</sup>		Weir Metrics	
	Natural Origin (NOR)	Hatchery Origin (HOR)	Natural Origin (NOS)	Hatchery Origin (HOS)	Weir Efficiency <sup>a</sup>	Weir Effectiveness <sup>b</sup>
	2013	73	18	5,627	2,567	0.010
2014	2,006	318	10,407	1,756	0.147	0.140
2015	35	19	10,439	3,308	0.004	0.005
2016	135	34	8,700	1,905	0.014	0.016
2017	344	103	5,429	1,139	0.058	0.075
2018	32	16	3,266	1,594	0.009	0.009
2019	82	24	2,604	2,849	0.017	0.008
2020	709	161	7,957	3,061	0.066	0.045
2021	37	9	4,525	2,521	0.006	0.003

<sup>a</sup> Estimates for weir efficiency are adjusted for prespawn mortality and include Chinook adults that are harvested, released, and collected for brood.

<sup>b</sup> Estimates for weir effectiveness are adjusted for prespawn mortality and include Chinook adults that are harvested or removed for pHOS management.

<sup>c</sup> Estimates do not include Chinook Zosel Dam counts.

<sup>d</sup> NOS and HOS estimates determined by 'reach-weighted' pHOS calculations

## 2021 Conclusions

- Flow not an issue for deployment- Installed in early- August at 900 cfs (maximum flow of 2,300 for current trap location) before major thermal barrier breakdown
- Based on adult pit detections at Wells and OKL, 20% of tagged fish had migrated past the weir before the weir was functional on August 10th
- Did not meet NOR brood goal for 15% component of total
- 92% of hatchery recoveries in the trap were from the integrated program
- Use similar trap location in 2022
  - Need to test the redesigned Whooshh chute so that it aligns with the point of access at the bank
- Algae was an obstacle for the second year in a row that limited trapping operations

# THANK YOU TO OUR CCT FIELD STAFF

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