

Adult Spring Chinook Passage Timing and Conversion

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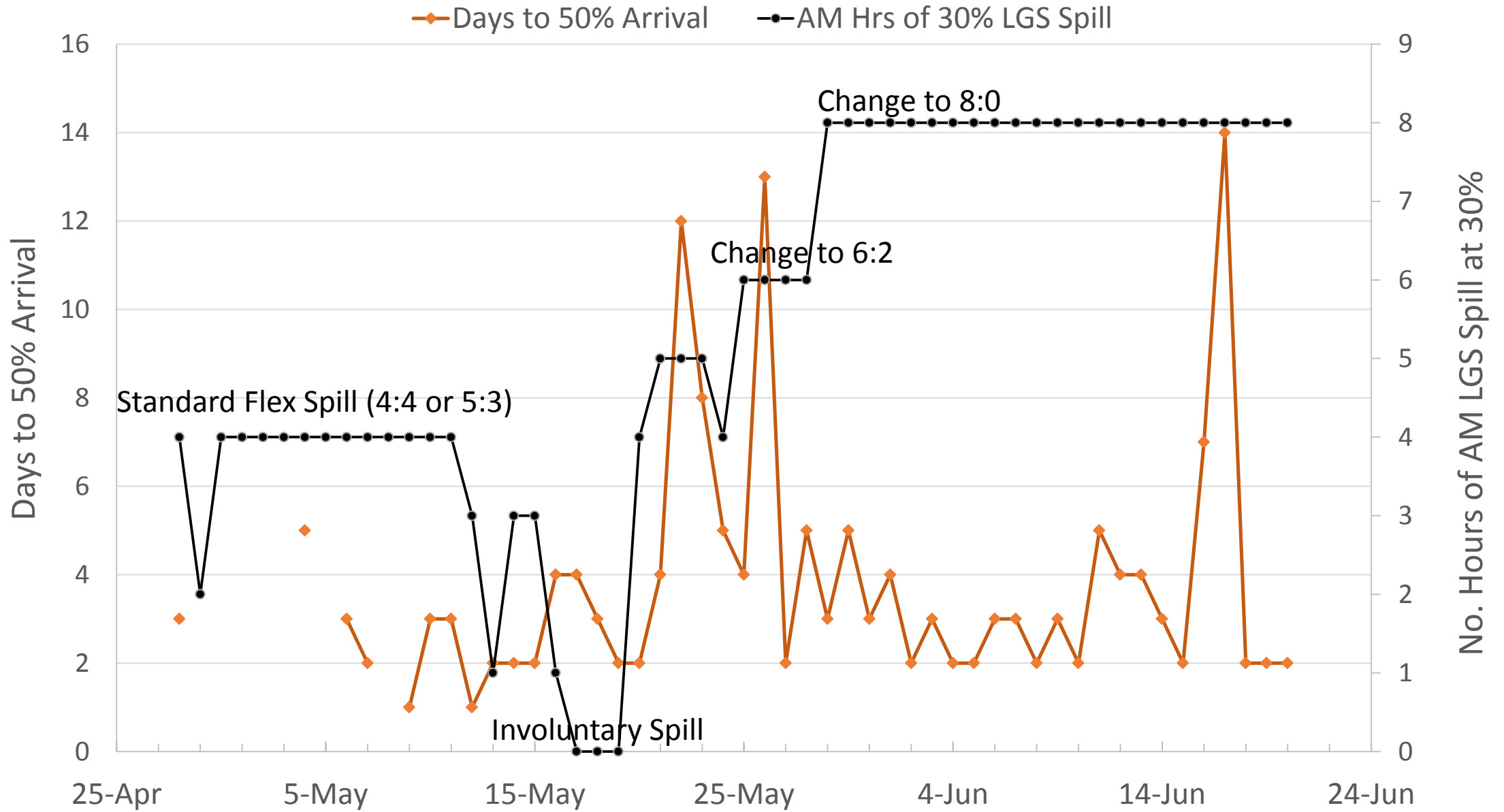
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TMT 2019 Year End Review

Metrics to Track Passage

Metric	Benefit	Caveat
Daily Window Count (Visual)	Easy to access and understand	Dependent on downstream passage and timing of run, can be biased by high reascension rates
<u>PIT Tag Counts</u>	Unique fish, near-real time	Can be misleading with low sample sizes
Harmonic Mean Travel Time	Reduces influence of extreme events	Can mask large changes
50% Cohort Arrival (Days)		
% of Run Outstanding		
Daily Cohort Conversion Rate		
Total Conversion Rate to LGR	Summarizes all tagged fish	Unknown until end of season
Reascension Rate	Additional info on behavior	No data on time between 1 st detection and fallback



LMN to LGS Adult Arrival Timing (% of fish that arrived after x calendar days)

	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
2014	0.1	48.2	74.2	84.8	89.7	92.4
2015	0.1	66.2	87.3	93.8	96.1	97
2016	0.3	61.1	81.8	89.3	92.7	94.4
2017	0	29.9	55.2	67.7	75.1	79.4
2018	0.2	37.1	62.8	75	82.2	85.4
2019	0	21.8	45.3	61.5	66.5	72.9

<u>Year</u>	<u>n at LMN</u>	<u>Conversion to LGS</u>
2014	1898	98.6%
2015	2154	98.3%
2016	1216	98%
2017	598	99%
2018	645	97.7%
2019	468	97.2%

Adult Impacts (from FPC Memo 24-19)

- Travel times in **excess of 20 days** between Ice Harbor and Lower Granite Dams significantly reduced the probability that a **wild origin** spring Chinook would successfully reach their basin of origin ($N_{wild}=3,854$).
- Being present during an identified period of operational impedance at Little Goose Dam was **not a significant predictor of the probability of reaching hatchery/basin of origin** for hatchery or wild groups in years 2005-2018.
- Fish passing Lower Monumental dam when **temperatures were above 62°F (hatchery), and 68°F (wild)** had significantly **lower probability of survival** to hatchery/basin of origin than fish migrating in cooler temperatures.

Harvest below Little Goose (Adults & Jacks)

Year	Dates	Total Catch	Catch Rate (Per Angler-Hour)
2018	April 22-23	1	
	April 29-30	3	
	May 6-7	7	
	May 13-14	66	
	May 20-21	95	
	May 27-28	55	
	Total	216	0.025 = 40 hrs/fish
2019	May 11-12	52	
	May 18-19	228	
	May 27	122	
	Total	402	0.07 = 15 hrs/fish

Total Adult Snake River Harvest

Year	Adult WDFW Quota	% of Adult WDFW Quota (all Snake R sites)
2018	883	38%
2019	331	95%

FPC Analysis of Juvenile Impacts - Memo 30-18

- PIT-PH for both yearling Chinook and steelhead at LGS and LMN increased due to reduced spill proportions and reduced discharge.

Date	Daily Average Spill Proportion	Daily Average PITPH (Chinook)	Daily Average PITPH (Steelhead)
May 28	0.43	0.44	0.44
May 29	0.50	0.35	0.33
May 30	0.40	0.48	0.49
May 31	0.37	0.50	0.52

- During the special operation at LGS, a **greater proportion of detections of subyearling Chinook occurred during night time hours** than the previous two days, likely due to increased powerhouse passage proportions after ponding/spill reduction caused more fish to be entrained in powerhouse flows.

Management Implications - USFWS

- In the Snake river we have highly detailed data on individual adult spring Chinook behavior over six years. Annual conversion to LGS and arrival timing at LGR was minimally impacted for most fish.
- We can use that knowledge to tailor our management response.
- Not all fish passage delays are created equal.
 - Need to consider:
 1. Time of year
 2. Location
 3. Species life-history
 4. Length of delay
 5. Potential for elevated mortality

Data Gaps

1. Impact on adult conversion and spawning success **upstream of Lower Granite**. Currently, sample sizes are limited, especially for wild fish.
2. Minor impact (1-2 days longer TT from LMN to LGS) for most adults. But proportion of “slow” (>10 days) converters was higher in 2019 than past years. Is it related to operations? Initial look at the data suggests its fairly random, but need a full analysis.