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# Migration Timing and Survival of Wild Chinook Salmon Using PIT-Detection at the Marsh Creek Instream Array

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January 31, 2024

# Acknowledgements

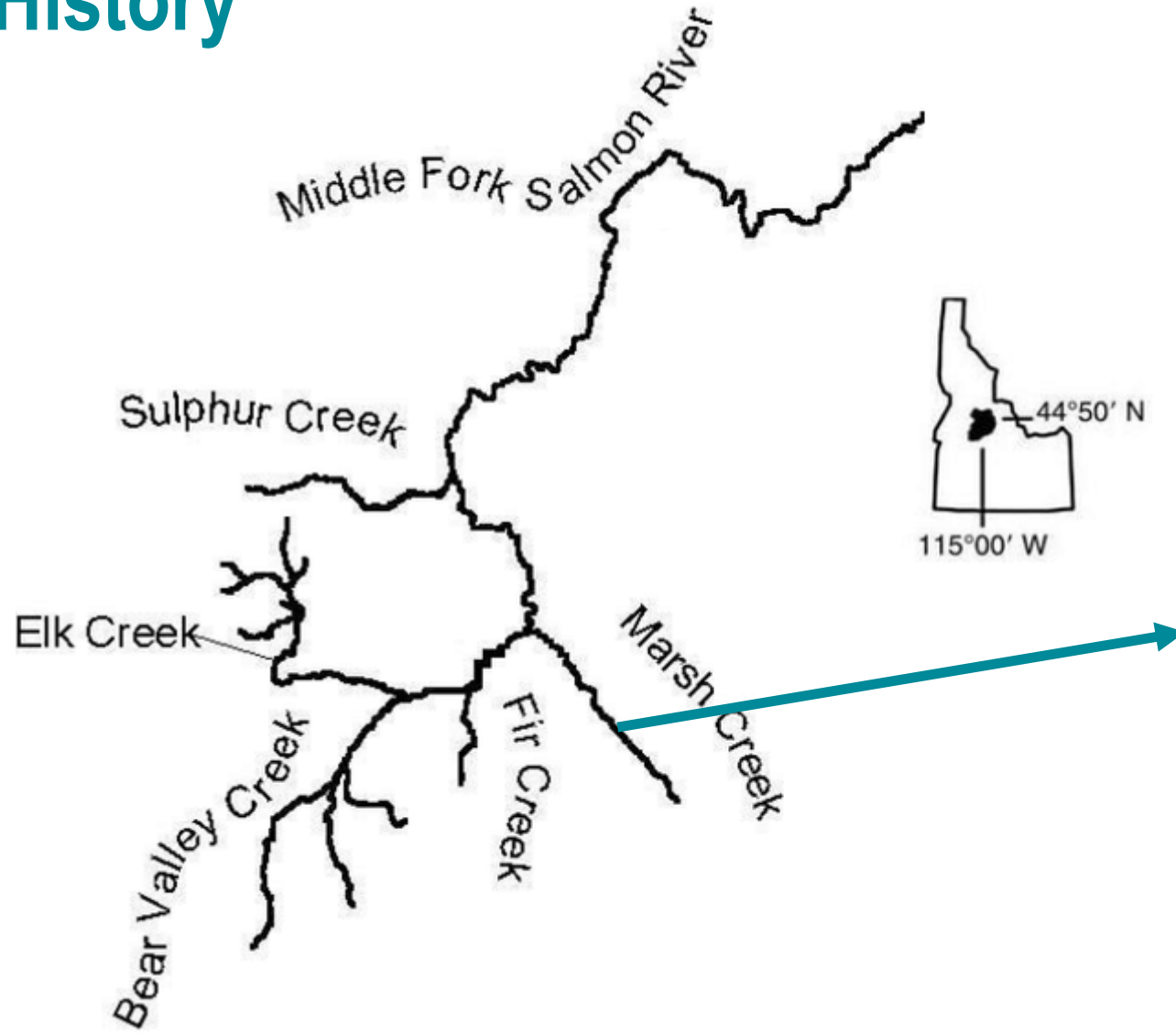
- Before doing anything, here's the important people and agencies!
- Marsh Creek In-stream Array – Gabriel Brooks, BioMark
- NOAA NWFSC Tagging teams led by Pasco Field Station, esp co-authors Gordy Axel and Jesse Lamb – and Steve Smith (analysis)
- Bonneville Power Administration for funding
- PTAGIS for database – Nicole Tancreto
- IDFG and Shoshone-Bannock Tribes for letting us tag their fish
- Earl Prentice and Steve Achord for making this possible!



PTAGIS



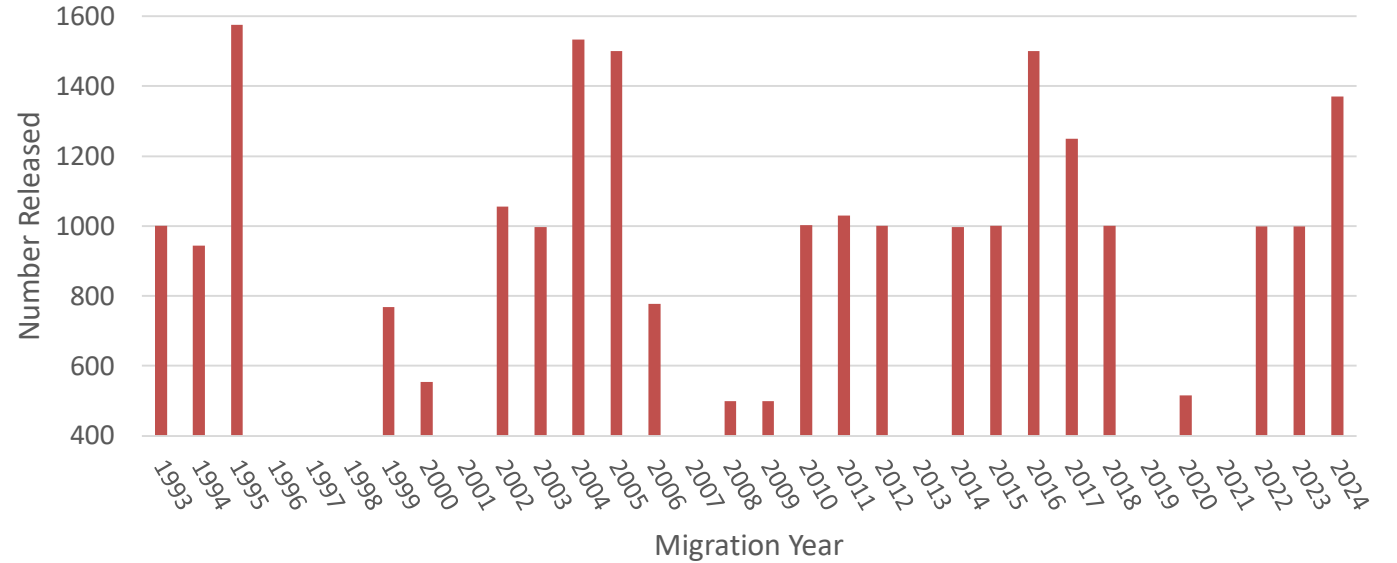
# History



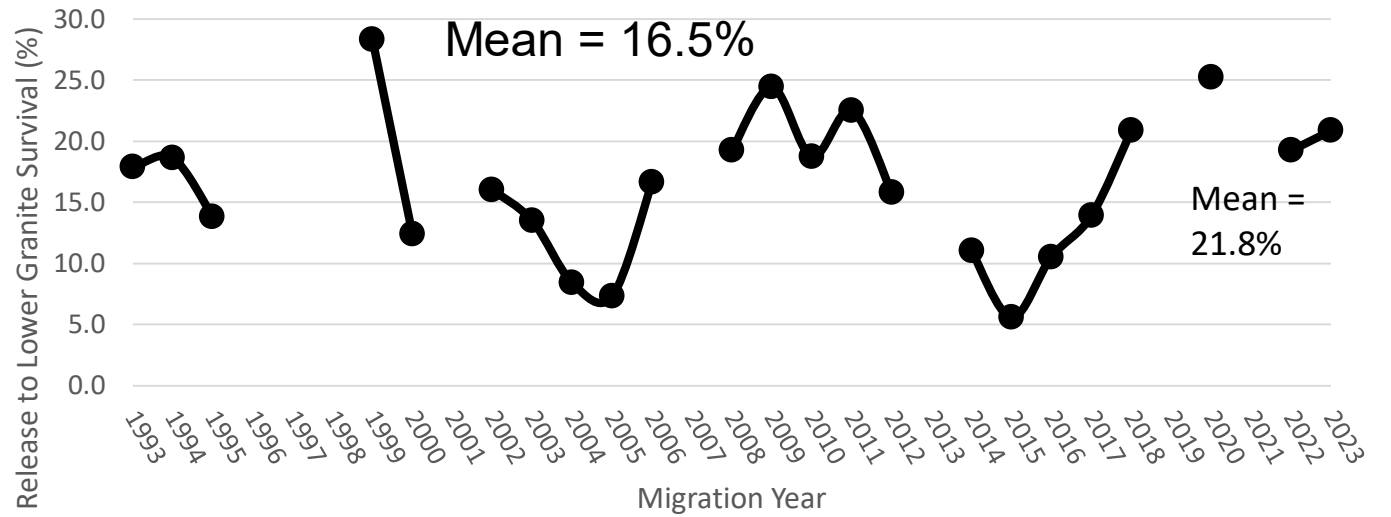
# History



Marsh Creek PIT-Tag Release Numbers (Survival Estimable Years)

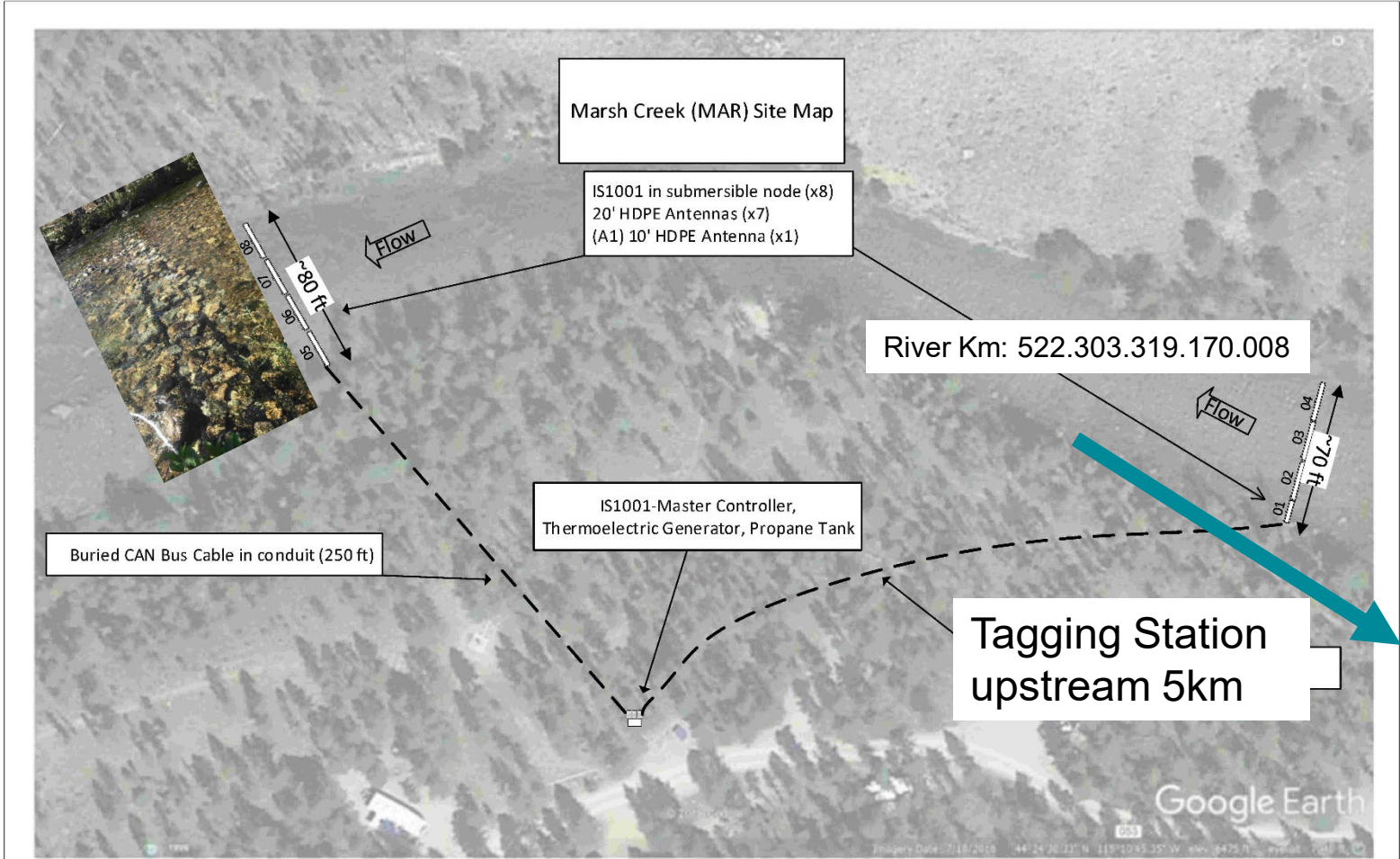


Marsh Creek PIT-Tag Survival Study



# History

Marsh Creek In-Stream PIT-tag Array installed in October 2019



Drawing Not To Scale



Title: Marsh Creek  
 Project:  
 Client: Eric Stark (Idaho Fish & Game)

Prepared By: Steve Anglea  
 Date: October 21, 2019

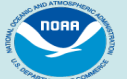
Notes: IS1001-Master Controller (x1),  
 IS1001 Reader (x8), 20' HDPE Antenna (x7),  
 10' HDPE Antenna (x1)  
 TEG (x1), Satellite Modem (x1)

# Methods



# Wild Chinook Salmon Survival and Timing Project based on PIT-tag detections at Marsh Creek Instream Array (MCIA), Lower Granite Dam (LGR), and “Below”

- Survival Estimates based on Cormack-Jolly-Seber (CJS)
- OR based on Expanded Detections (Sandford and Smith 2002) using separately estimated daily detection efficiency at LGR
- Migration timing estimated at MCIA based on observation distribution
- Migration timing estimated at LGR based on expanded observations (as above)
- Survival estimated for Release-MCIA, Release-LGR, and thus MCIA-LGR overall and by season
- We had “late” installation in 2019, COVID in 2020, and “it’s only 1/31/2024”, SO complete survival estimates are only available for MY2022, and MY2023.

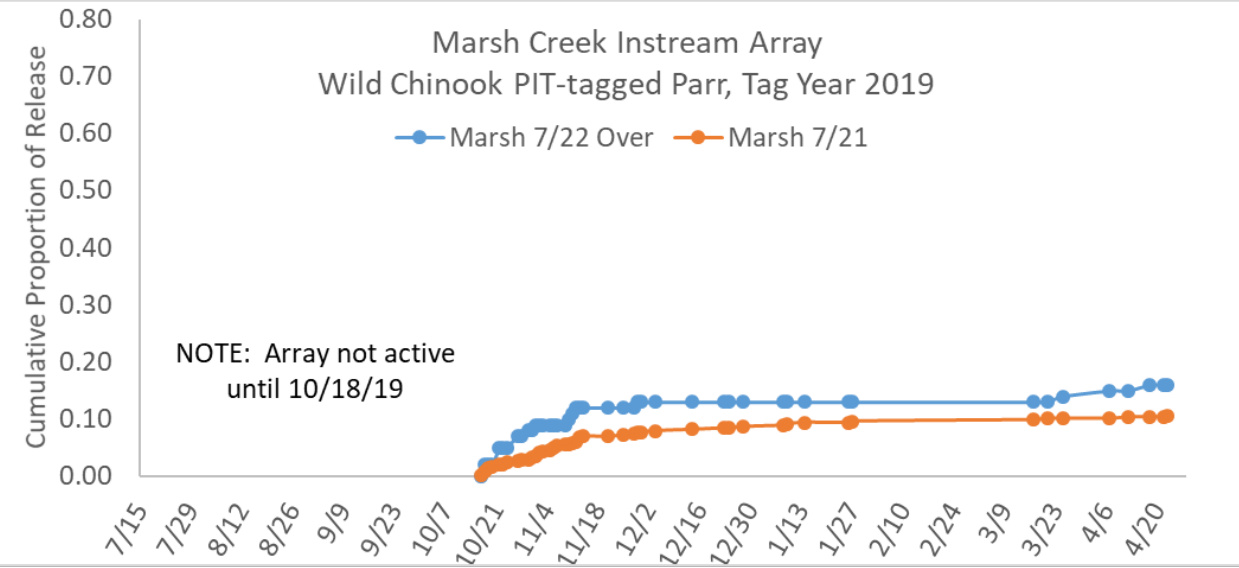
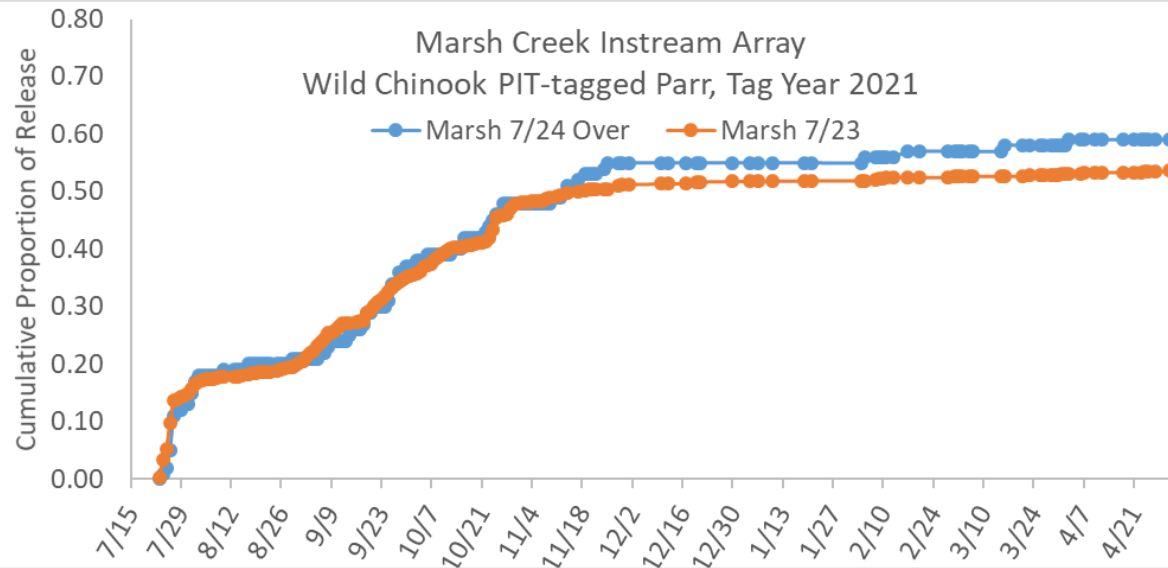
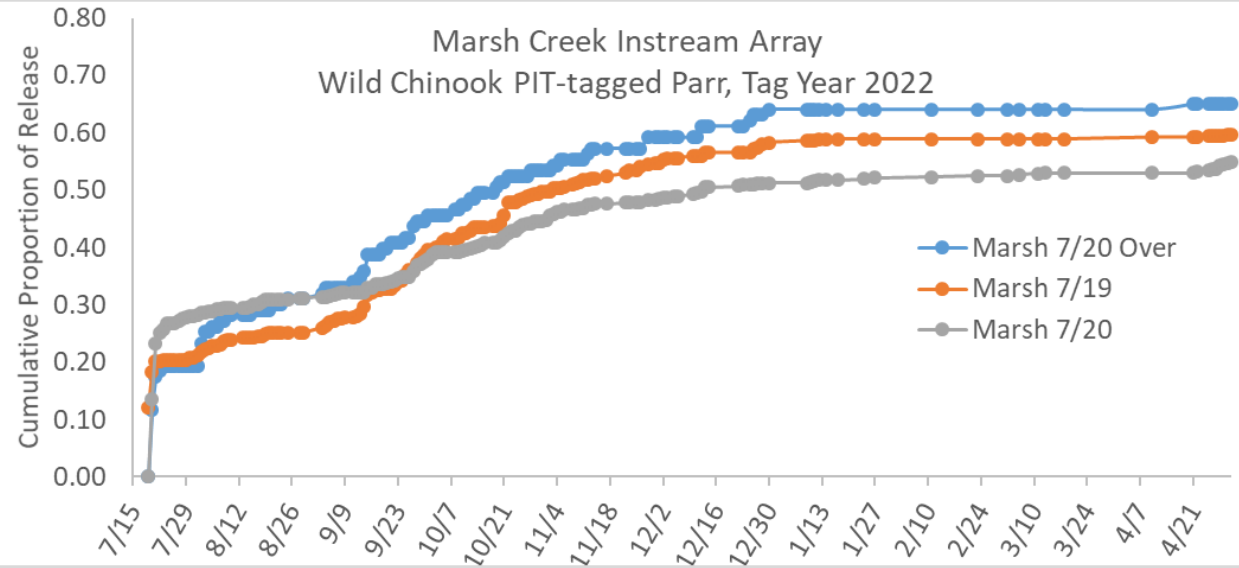
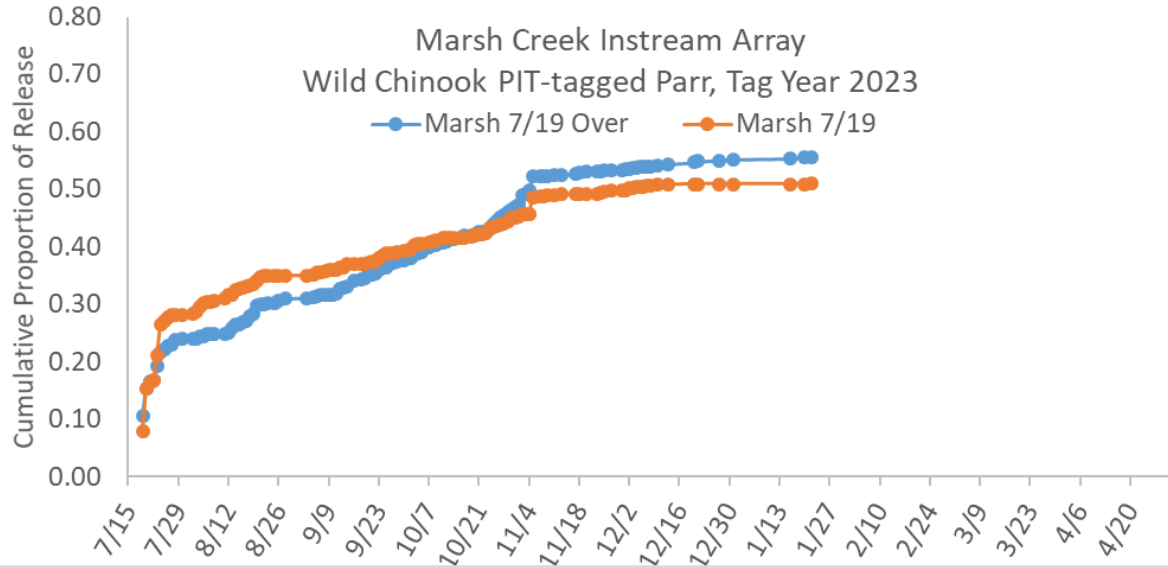


# Results

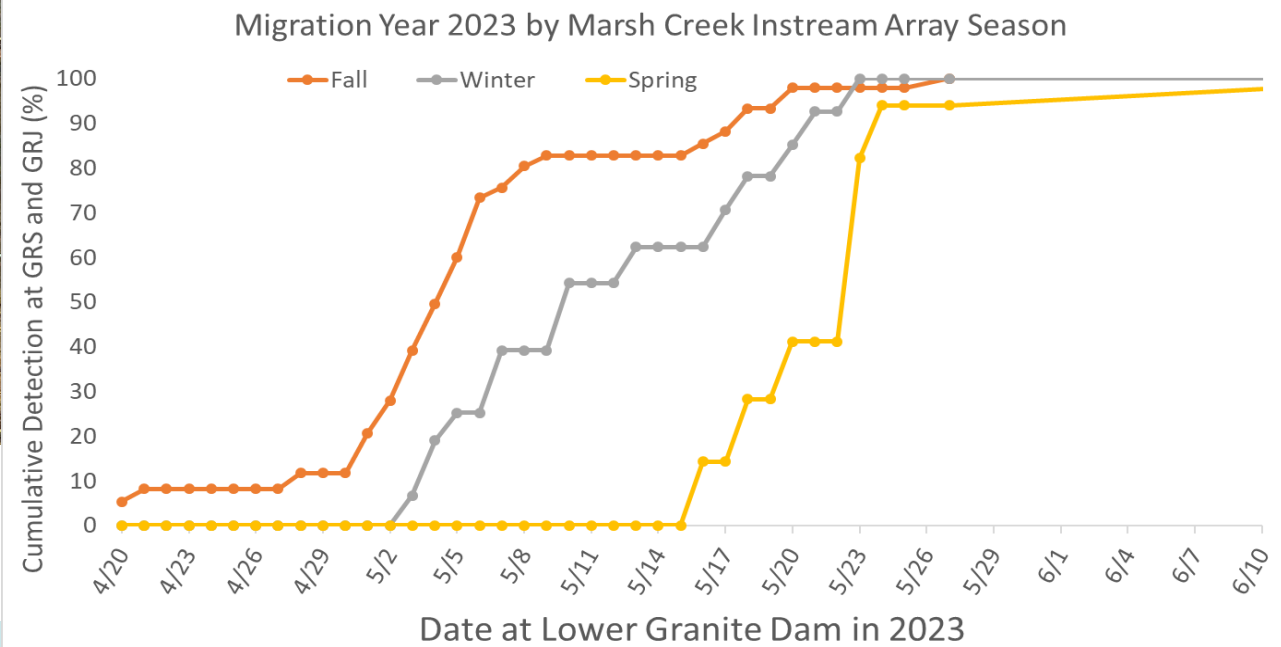
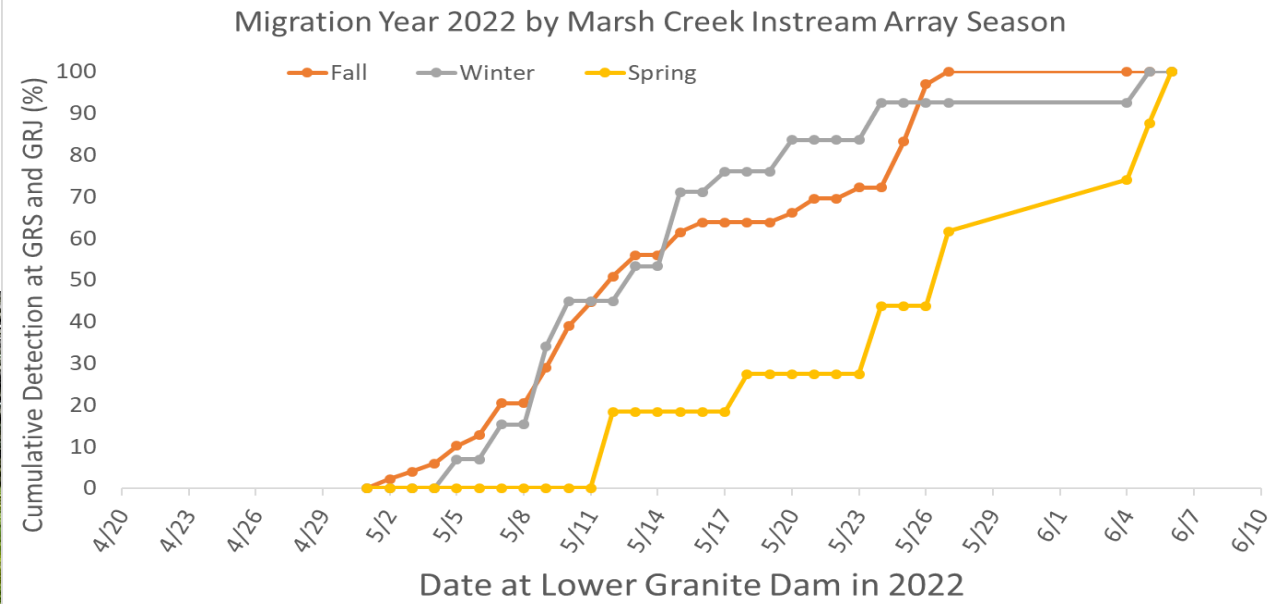




# Results – Timing – Marsh Creek

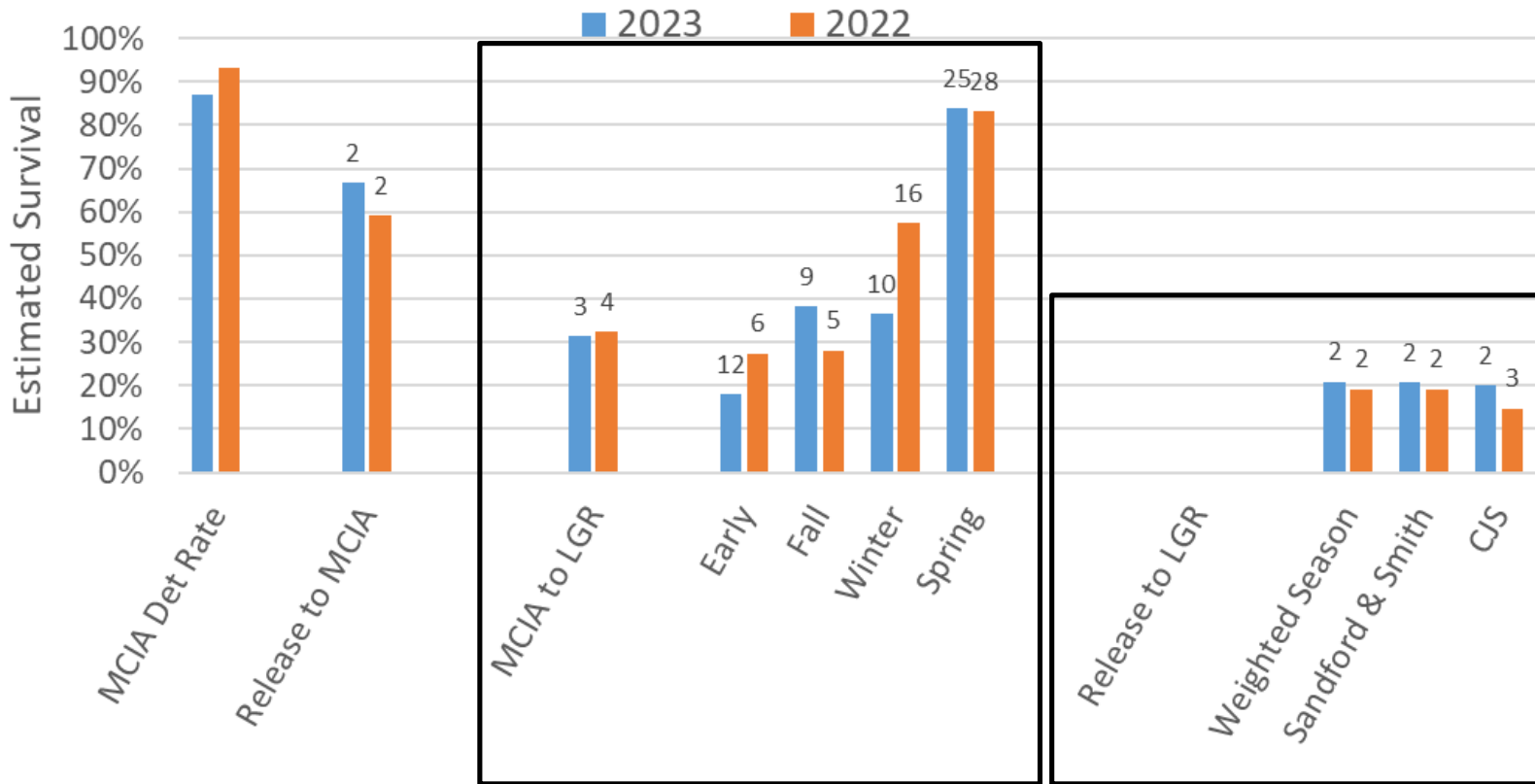


# Results – Timing - LGR



# Results - Survival

Marsh Creek Survival Estimates by Reach and Time Period



# Summary

- **Long-term PIT-tag datasets are available to estimate Survival and Timing – but new instream arrays provide for more metrics and in more detail**
- **Marsh Creek Instream Array provides high, continuous, and annually-consistent PIT-tag detection**
- **Resulting data produce year-long timing information for Marsh Creek**
- **and Release-to-MCIA survival**
- **Resulting data produce seasonal survival estimates from MCIA to LGR**
- **Recent and future improvements in PIT-tag technologies improve accuracy and precision of estimates**



# Thank You! Questions?

