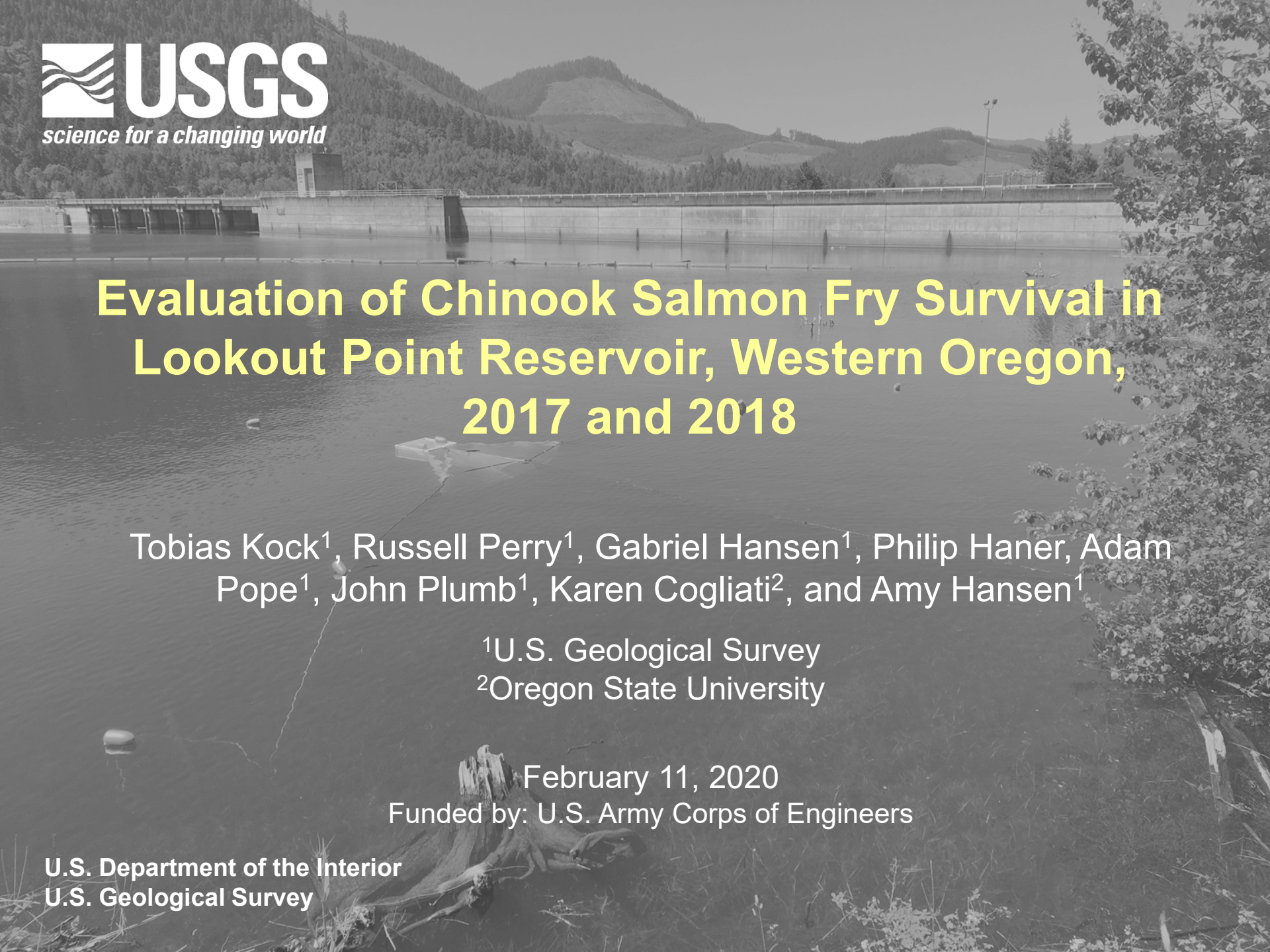

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Evaluation of Chinook Salmon Fry Survival in Lookout Point Reservoir, Western Oregon, 2017 and 2018

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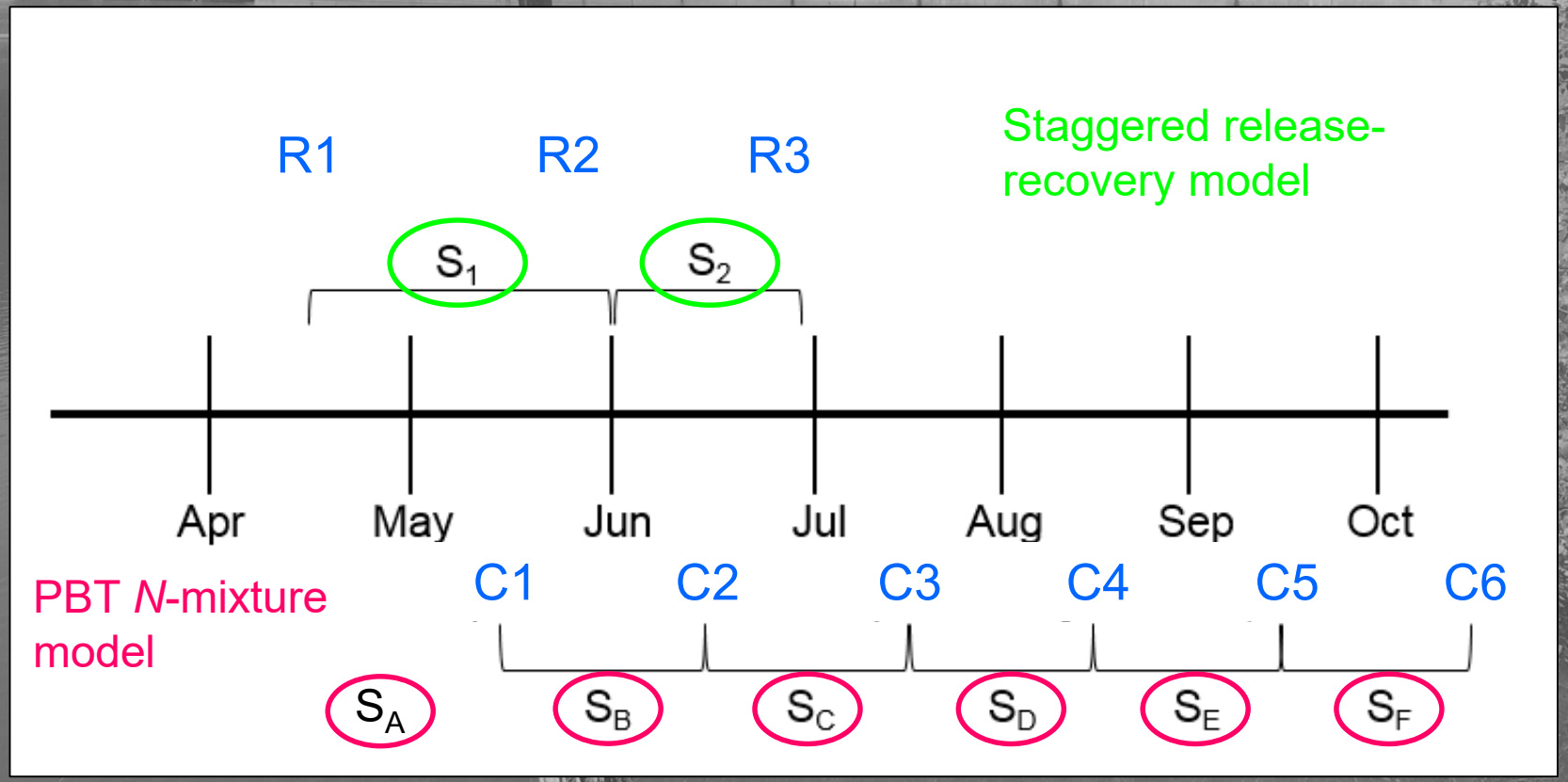
February 11, 2020

Funded by: U.S. Army Corps of Engineers

U.S. Department of the Interior
U.S. Geological Survey

Study Design



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Fish Releases

2017

Release	Dates	Number released	Mean fork length
R_1	April 18-19	43,949	42 mm
R_2	May 30-June 2	44,147	94 mm
R_3	June 28	3,920	107 mm

2018

Release	Dates	Number released	Mean fork length
R_1	April 10-13	119,272	44 mm
R_2	May 15-18	32,432	90 mm
R_3	June18-19	12,129	92 mm

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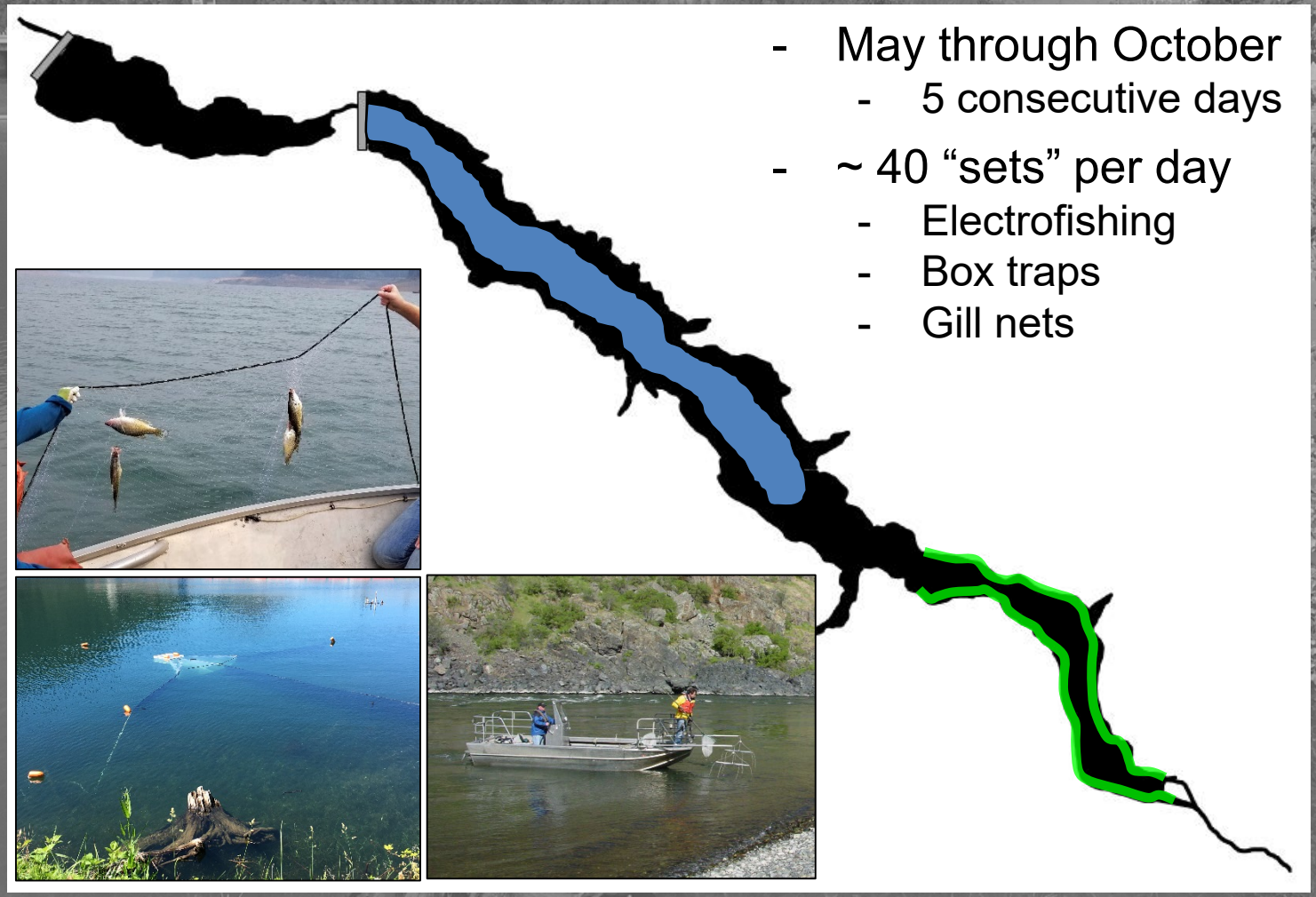
Fish Sampling



- May through October
  - 5 consecutive days
- ~ 40 “sets” per day
  - Electrofishing
  - Box traps
  - Gill nets

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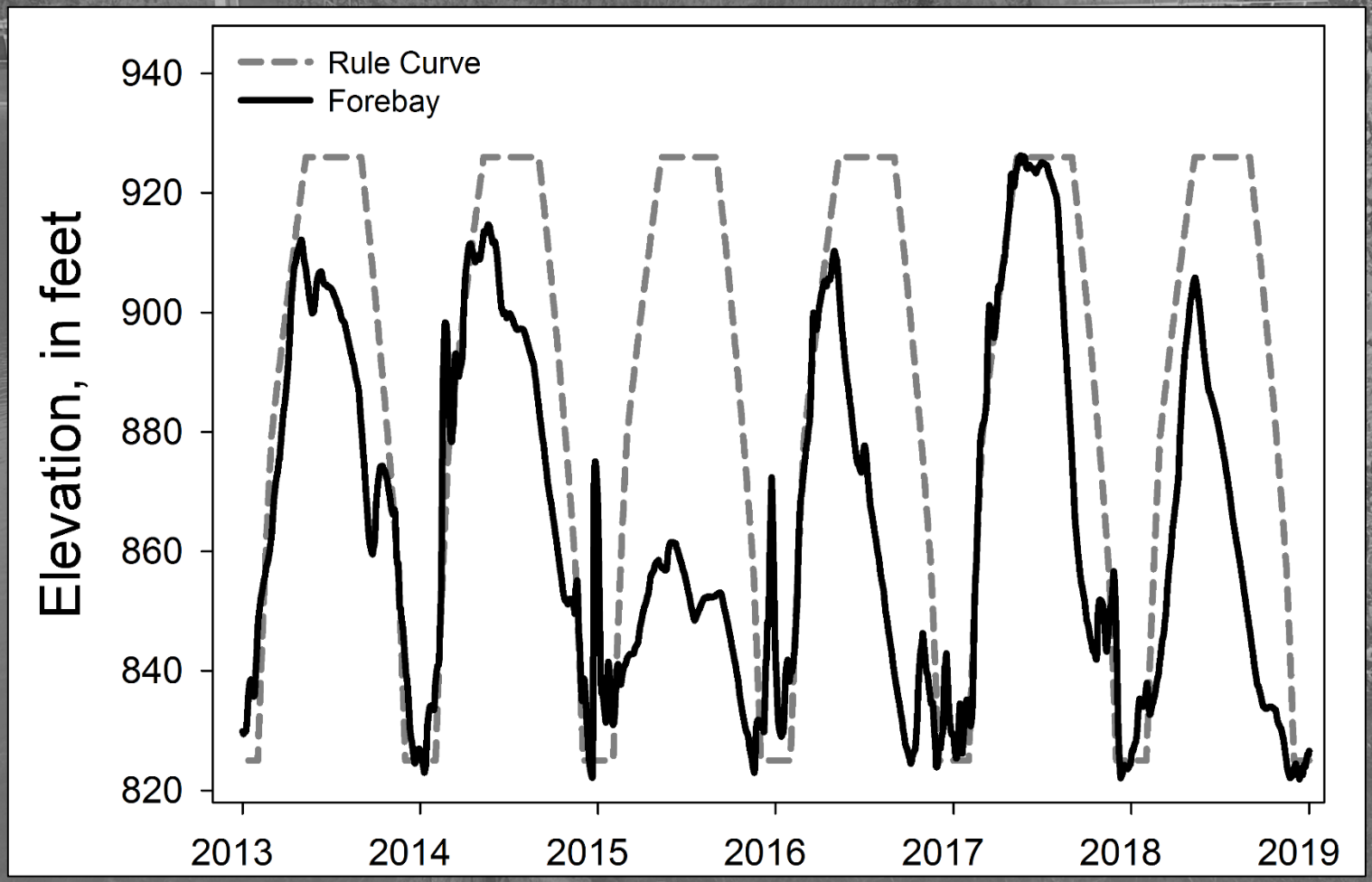
Reservoir Elevation



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Shoreline Conditions

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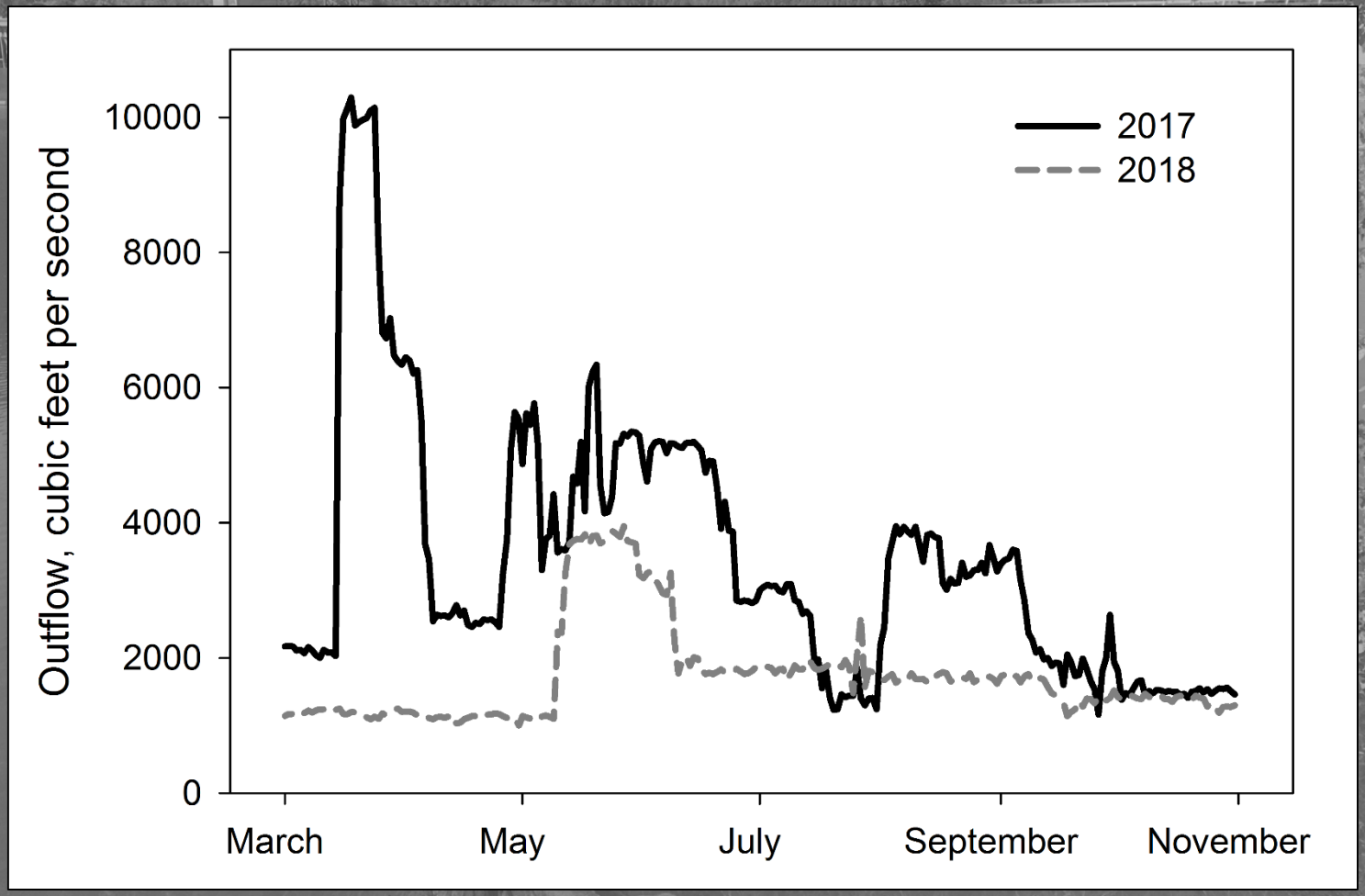
Discharge at Lookout Point Dam



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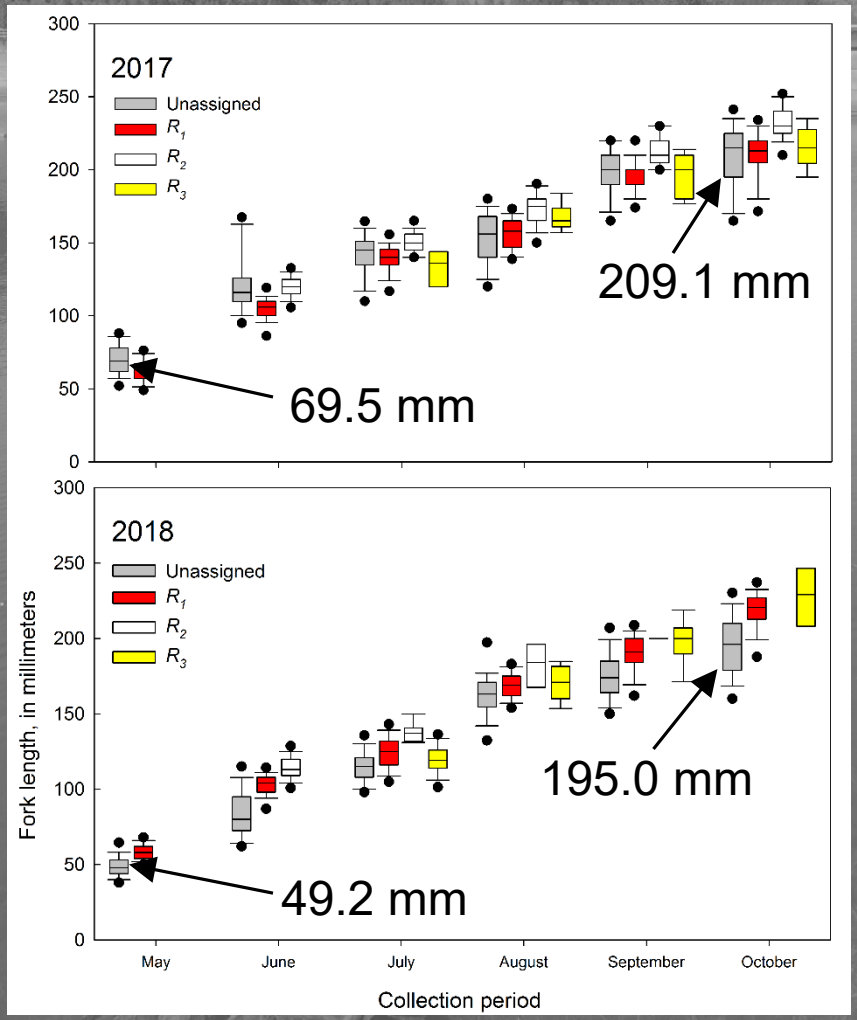
Fish Size by Release Group



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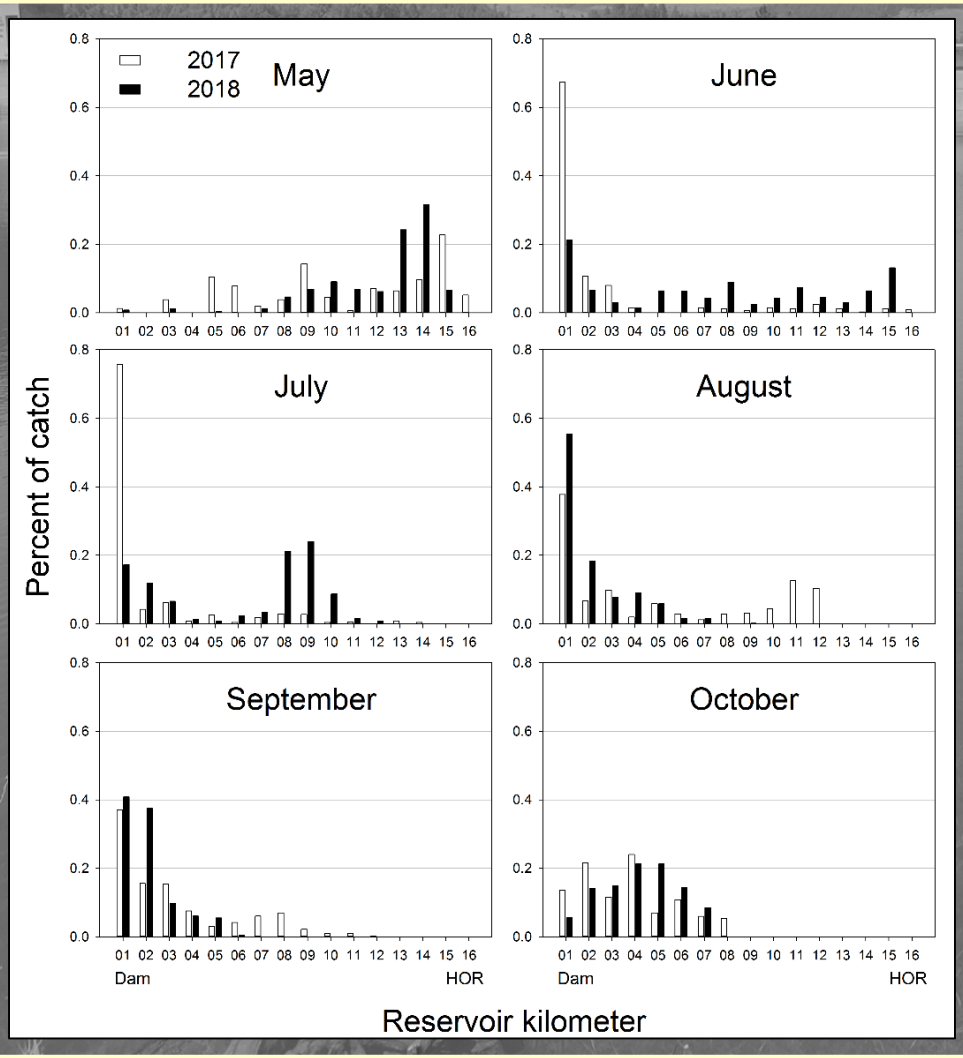
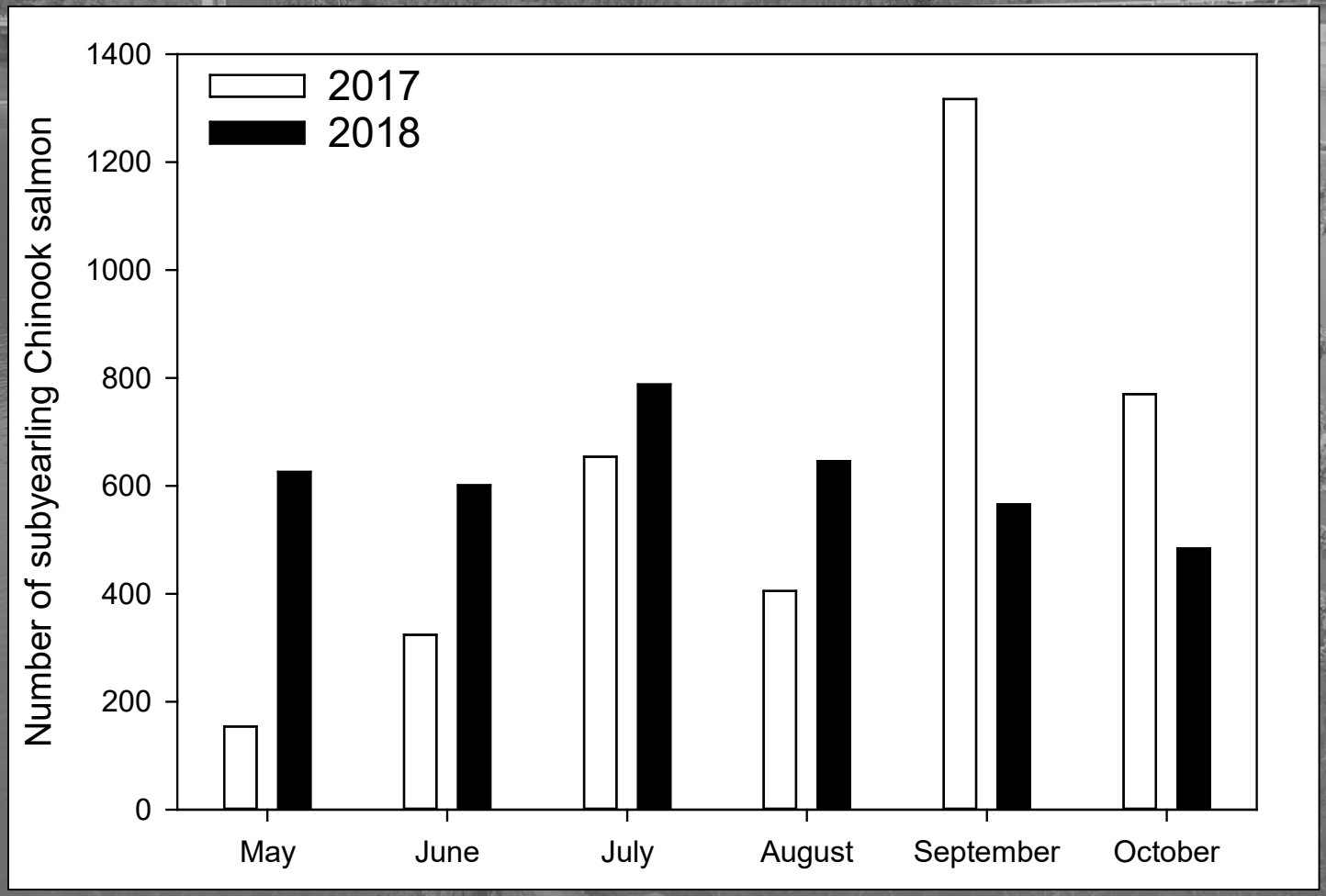
Catch Distribution



Number of Fish Collected



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Genetic Results

Year	Total	Unassigned	R1	R2	R3
2017	3,584	2,201 61%	466 13%	881 25%	36 1%
2018	2,957	1,887 64%	951 32%	55 2%	64 2%

- 92,016 fish released in 2017
- 163,833 fish released in 2018
- Special thanks to Kathleen O'Malley and Sandra Bohn, OSU
  - Genetic and parentage analyses

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Staggered Release Estimates

Time period	2017				2018			
	R1, R2, R3	R1, R2	R2, R3	R1, R3	R1, R2, R3	R1, R2	R2, R3	R1, R3
Mid-April	0.646	0.604			0.991	0.987		
Late-May								
Late-May	0.965		0.963		0.648		0.115	
Late-June								
Cumulative	0.623		0.582	0.942	0.642		0.114	0.880

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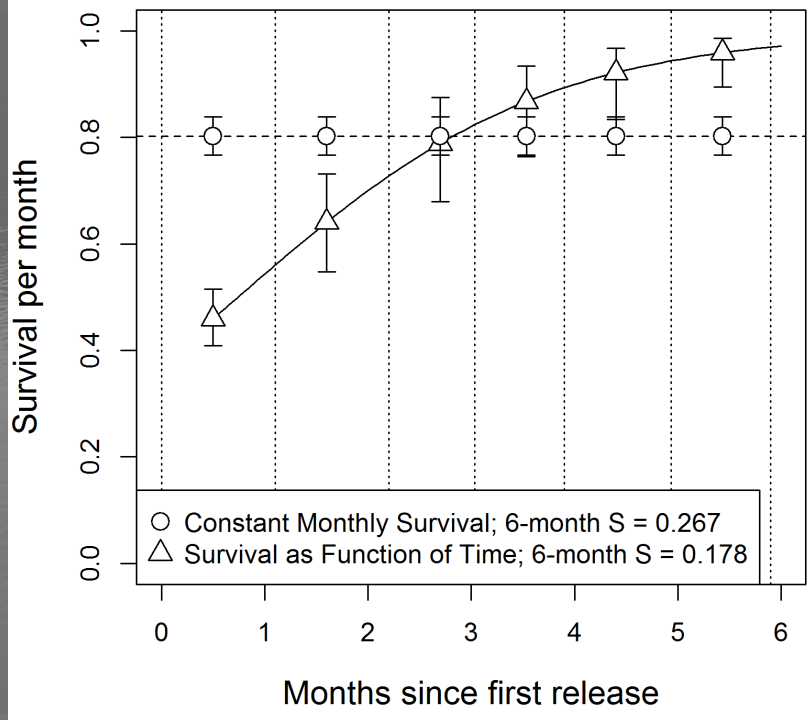
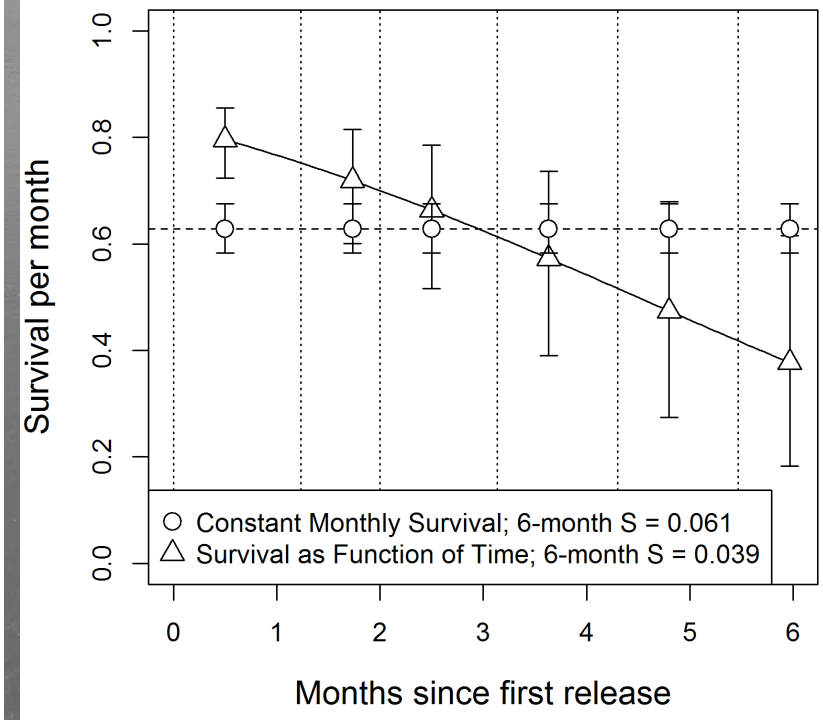
PBT *N*-Mix Survival Estimates

2017



2018



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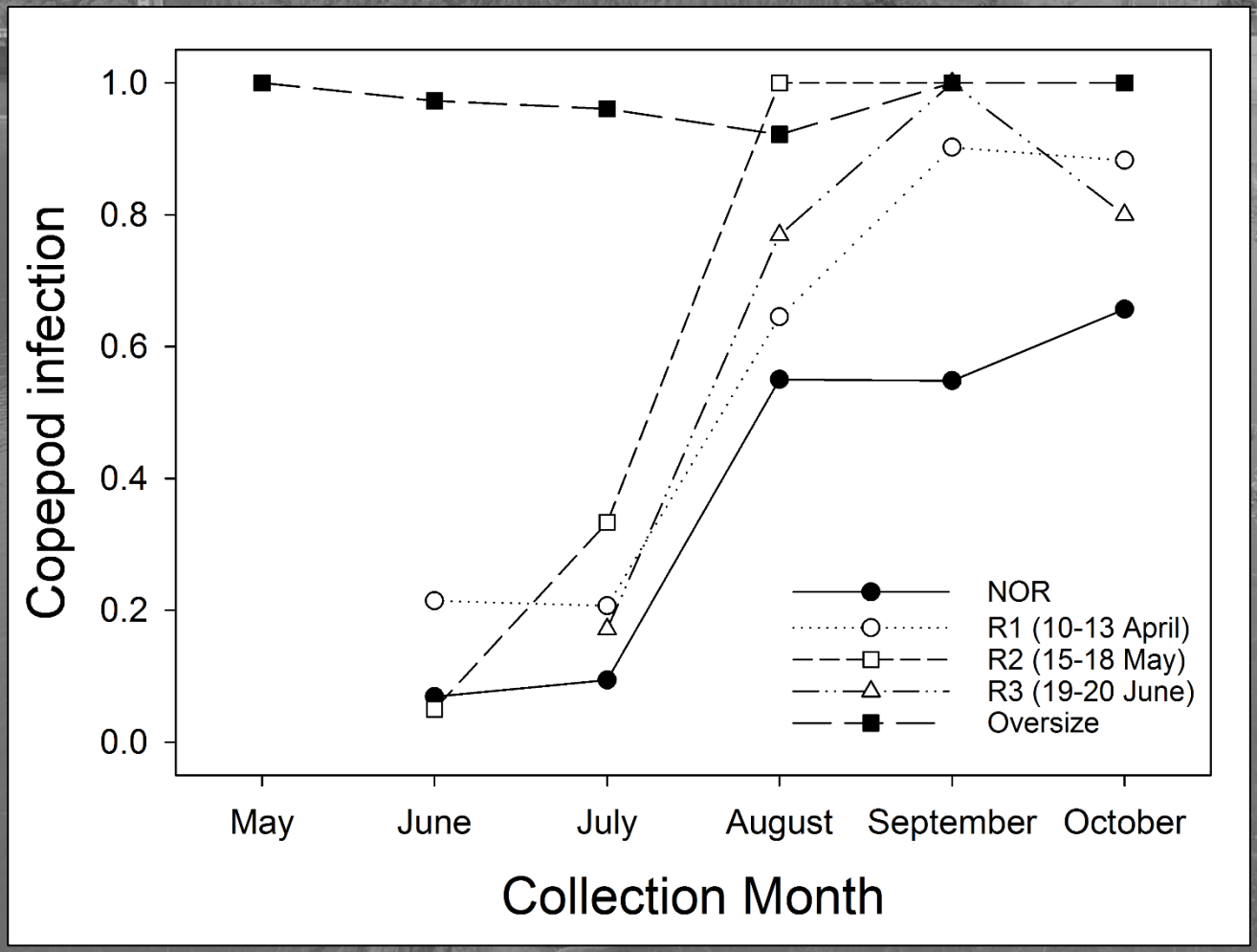
Copepod Infection: 2018



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Conclusions

- Survival estimates differed substantially between 2017 and 2018
  - Different reservoir conditions between years
  - Unknown effects of copepods
  - 2017 estimates within reported range, 2018 estimates very low
- Staggered Release-Recovery Model
  - Difficult to meet assumptions in a field setting
  - Not recommended for future studies
- PBT *N*-mixture Model
  - Provides reliable estimates with low capture probabilities in the field
  - 2 releases recommended in future studies (April/May)
  - Increased sampling frequency during April-June recommended

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Acknowledgments

- Karen Cogliati, Rob Chitwood, Ryan Koch, and staff Wild Fish Surrogate Program
- Greg Taylor, Todd Pierce and staff, USACE Willamette Valley Project
- Fred Monzyk and Cam Sharpe, ODFW
- Dan Peck and staff, Willamette Hatchery
- Kathleen O'Malley and Sandra Bohn, OSU
- Rich Piaskowski, Scott Fielding and Fenton Khan, USACE Portland District

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