Growth of Smolts Between Lower Granite and Bonneville Dams

Seasonal Effects Study

Tiffani Marsh, Steve Smith, and Lyle Gilbreath

Growth of Smolts

1. Background
2. Methods
3. Multi-year analysis
4. 2014 analysis

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2. Years with same designation often show different juvenile survival and SAR results.
3. Can we measure the response of fish to the physical characteristics experienced during their migration through the hydropower system?
4. Recapture fish at Bonneville Dam that had been tagged at Lower Granite Dam for various NOAA studies to determine growth, then compare growth with annual physical/operational characteristics.

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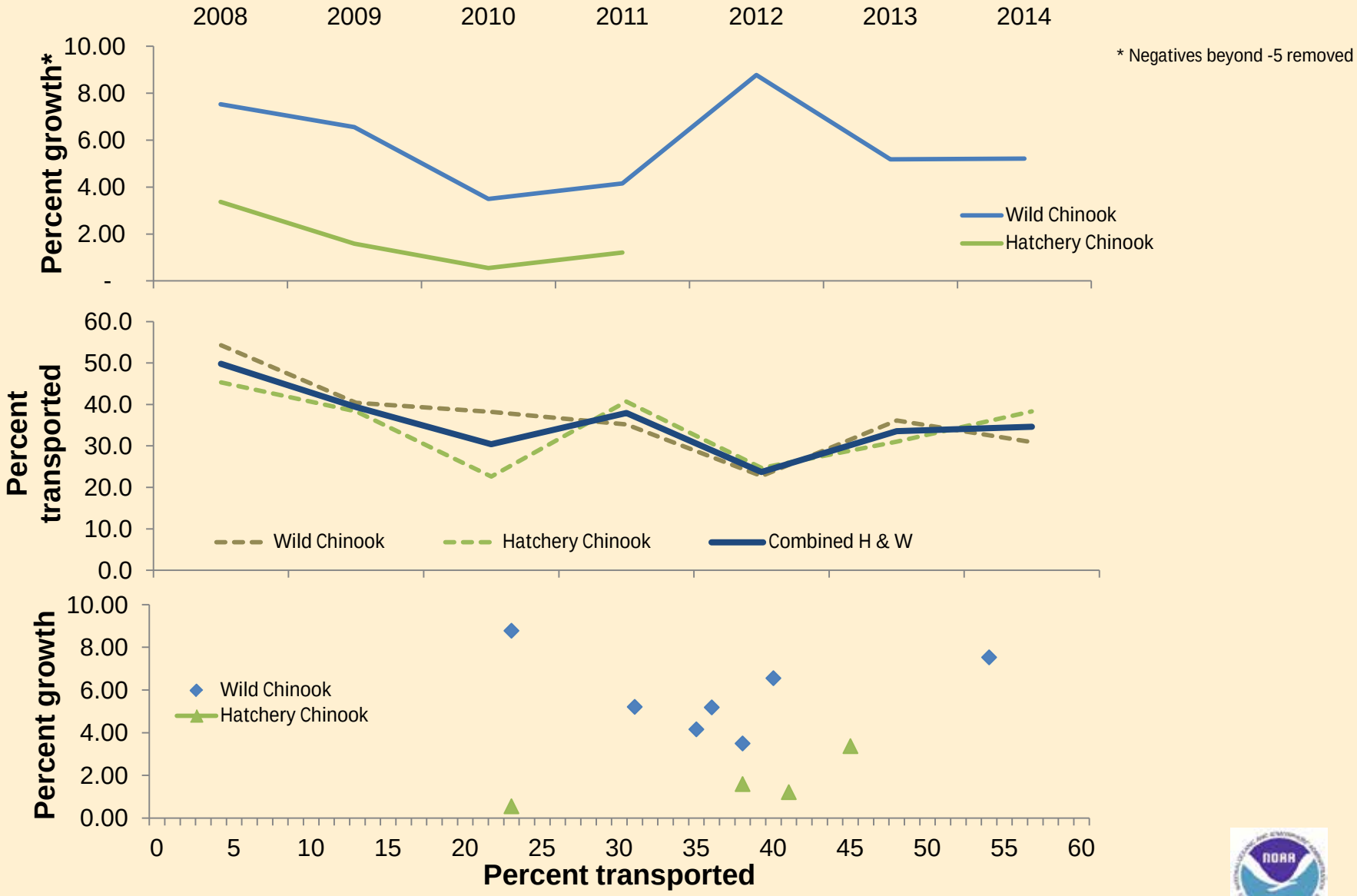
4. Due to tagging limitations, only fork lengths were recorded at Lower Granite Dam prior to 2013.
5. Compared growth (length) to annual physical/operational characteristics.

Growth of Smolts



Growth of Smolts

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Species	Rear type	Weight gain		
		< 0	0	>0
Chinook	Wild	64	8	289
Steelhead	Wild	72	1	28
	Hatchery	116	2	35

Growth of Smolts

2014 Data

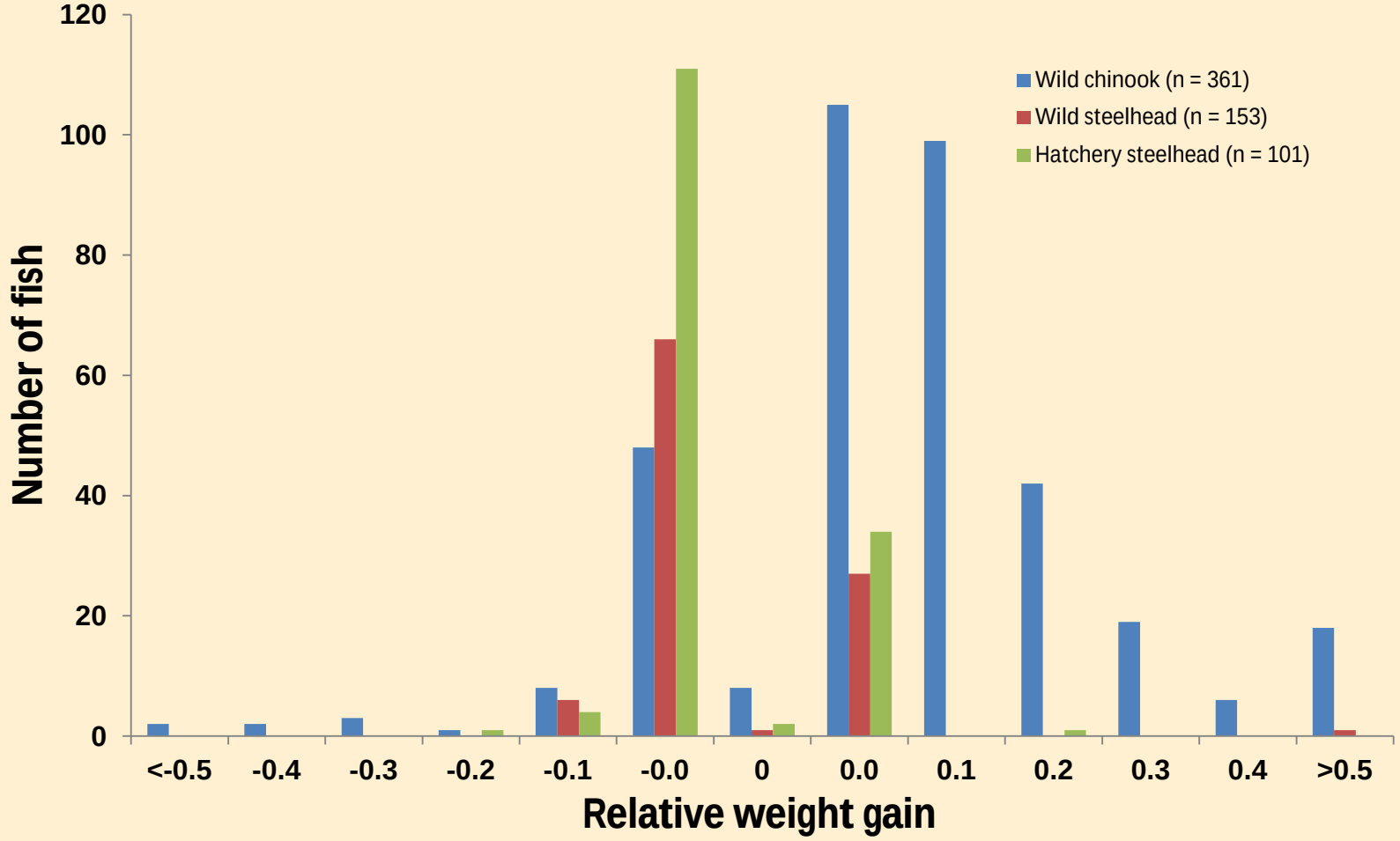
Species	Rear type	n	Relative weight gain Average	Max	Min
Chinook	Wild	361	0.14	1.83	(0.53)
Steelhead	Wild	101	(0.02)	0.79	(0.15)
	Hatchery	153	(0.02)	0.26	(0.25)

2013 Data

Species	Rear type	n	Relative weight gain Average	Max	Min
Chinook	Wild	254	0.08	0.81	(0.50)
Steelhead	Wild	85	(0.04)	0.59	(0.23)
	Hatchery	166	(0.03)	0.21	(0.30)

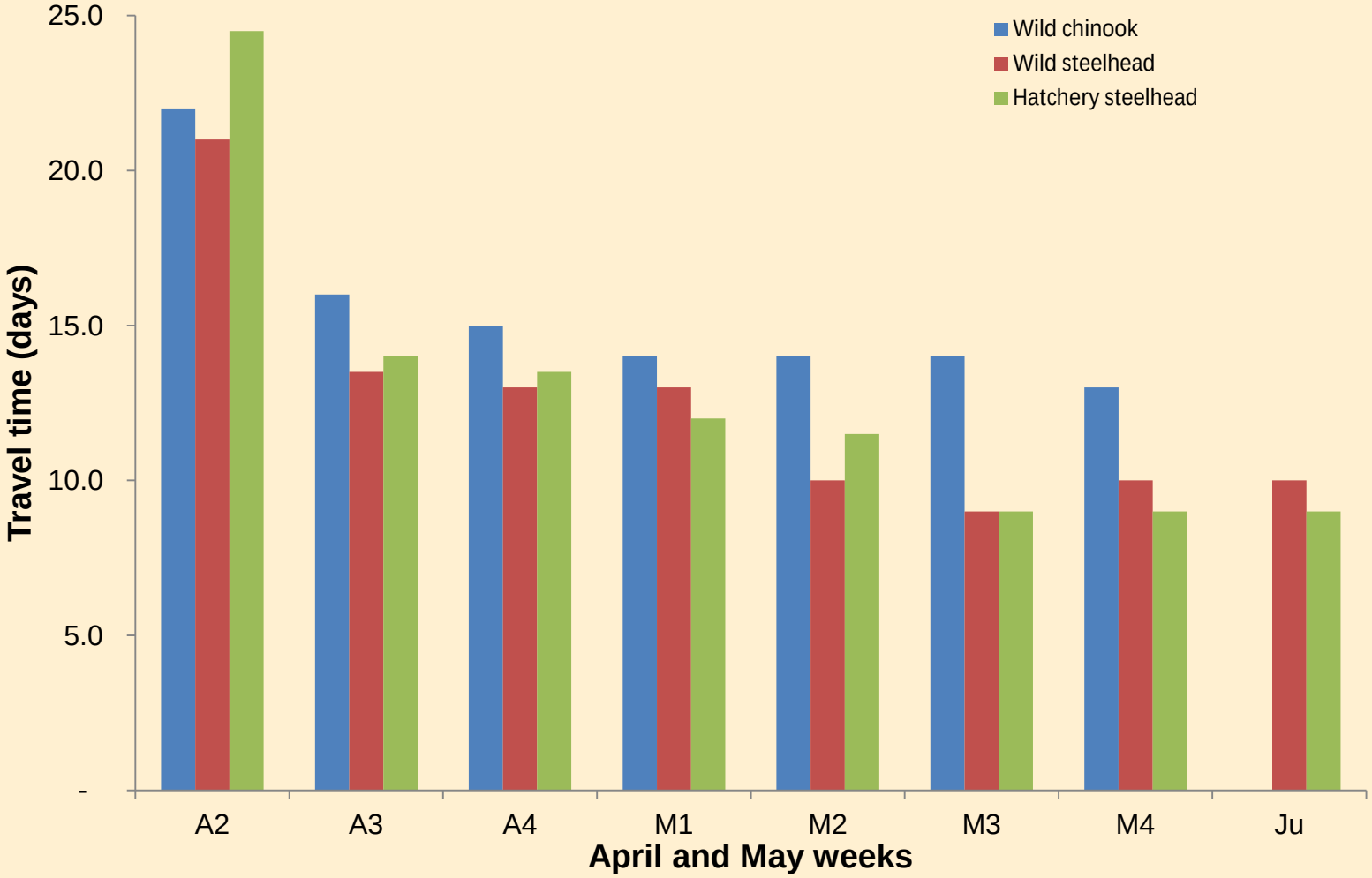
Growth of Smolts

Weight gain (relative to weight at tagging)



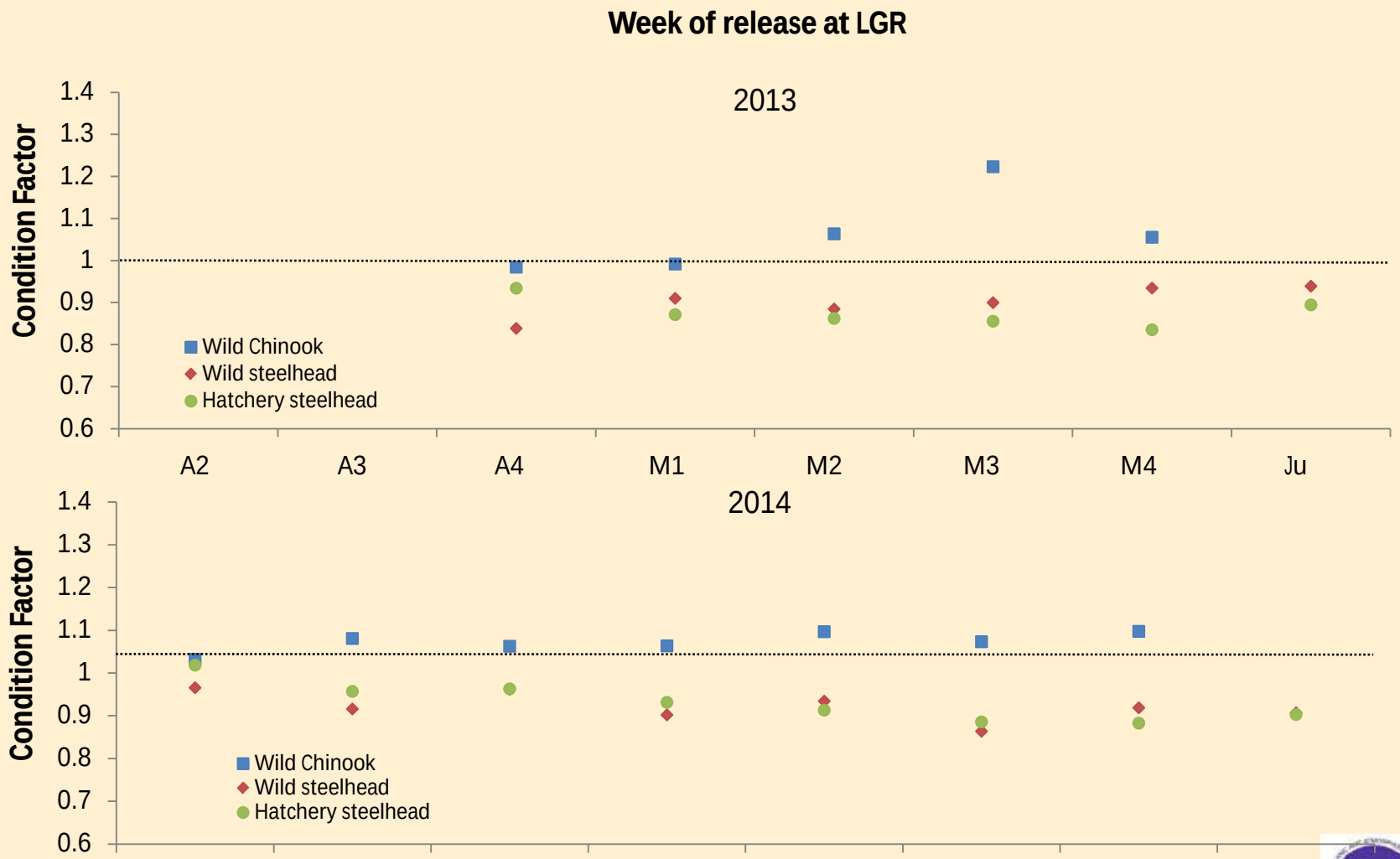
Growth of Smolts

Travel time (LGR to BON)



Growth of Smolts

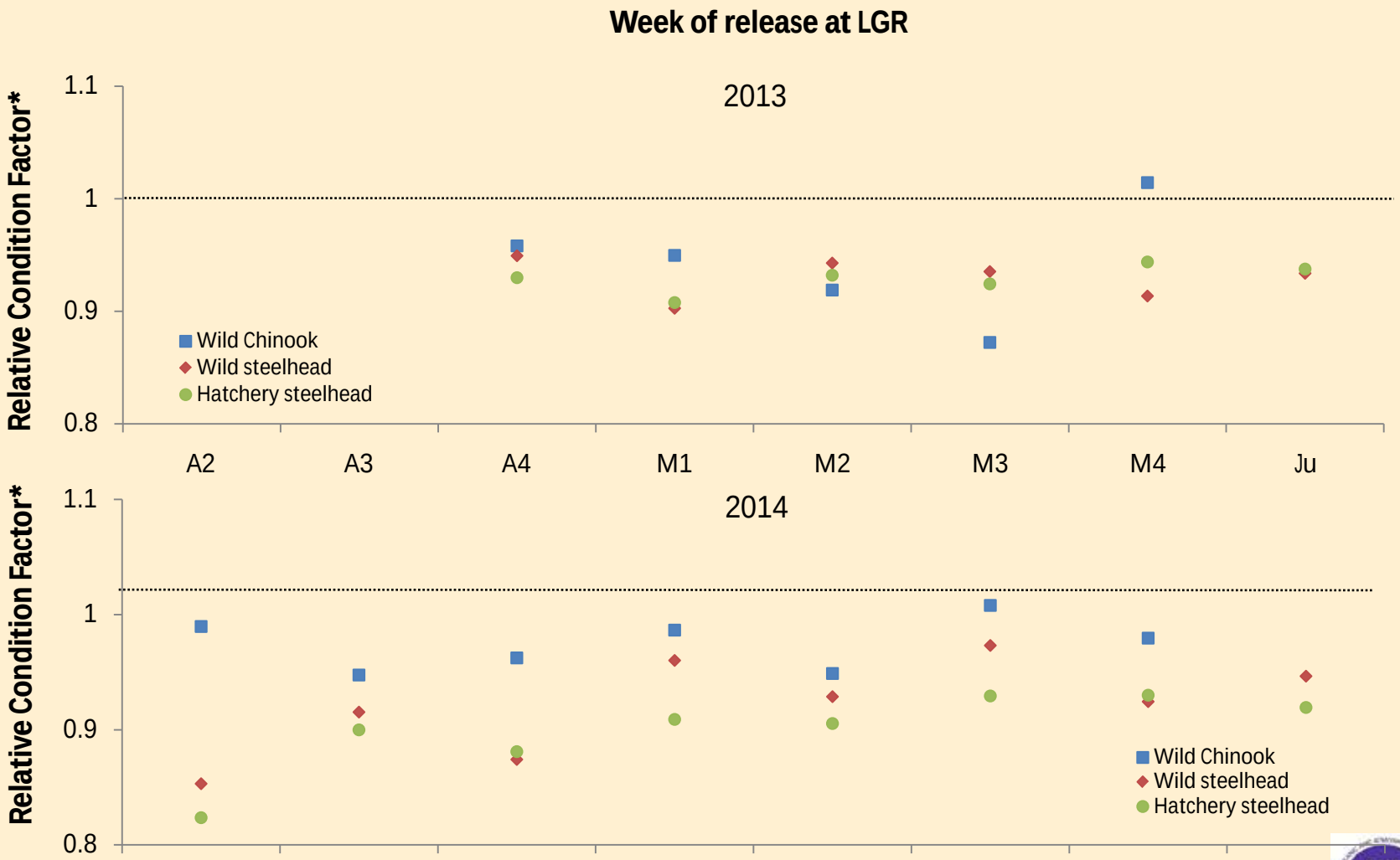
Condition Factor - at LGR



* Negatives beyond -5 removed

Growth of Smolts

Relative Condition Factor - BON/LGR



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2. In 2014, wild Chinook salmon relative conditional factor (CF) fluctuated up and down over the season, ending slightly lower than the first week.
3. Wild and hatchery steelhead CF also fluctuated over the course of the outmigration, ending higher by the end.

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Still to do:

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2. Compare growth and CF to SAR estimates.

Questions?