Highlights from ODFW Reservoir RM&E Studies Conducted in 2016

Principal Investigators:

Fred R. Monzyk
Jeremy D. Romer
Ryan Emig
Thomas A. Friesen

Oregon Department of
Fish and Wildlife
Corvallis Research Lab
Corvallis, Oregon

2016 Highlights

- Juvenile Steelhead Migration Timing Past Foster Dam on the South Santiam River
- Juvenile Chinook Salmon Distribution in Lookout Point Reservoir
- Estuary Timing of Chinook Salmon Emigrating from Reservoirs in the Fall

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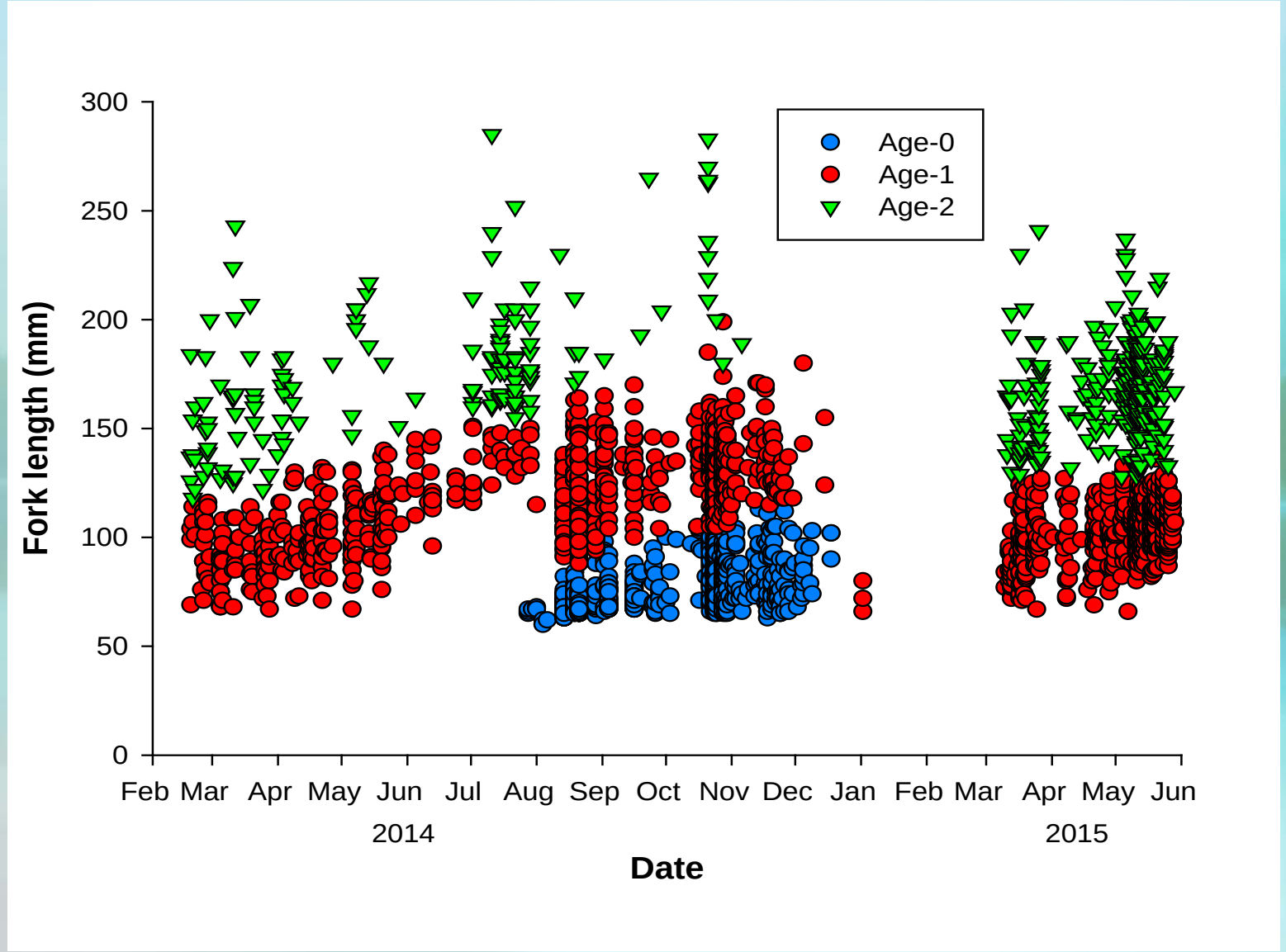
Juvenile Steelhead Migration Timing Past Foster Dam

- Collected and PIT-tagged juveniles by various means above the dam (Reservoir, mainstem, and tributaries: Moose Cr, Canyon Cr, Soda Fk)

- Detected at Foster weir and Lebanon Dam antennas (travel time=2d)

Juvenile Steelhead Migration Timing Past Foster Dam

Estimated Age of Steelhead



Juvenile Steelhead Migration Timing Past Foster Dam

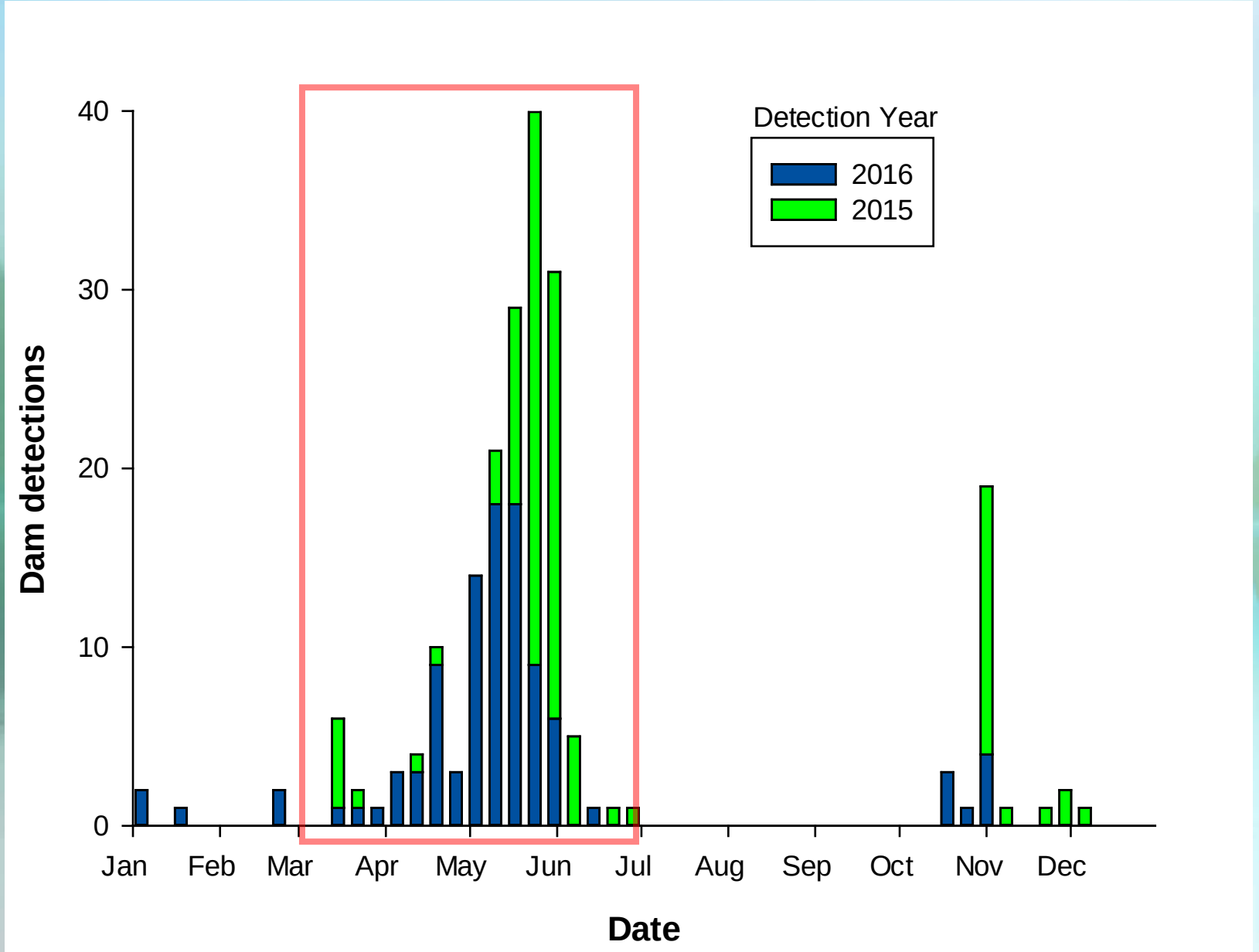
Estimated Age of Steelhead Tagged in 2014-2016

Age	@Tagging		@Dam Passage		@Willamette Falls	
	n	%	n	%	n	%
0	1,987	36	7	3	0	0
1	2,795	51	55	25	8	9
2	703	13	156	71	82	88
3*	8	<1	3	1	3	3
Total	5,594		221		93	

* Possibly > age-3

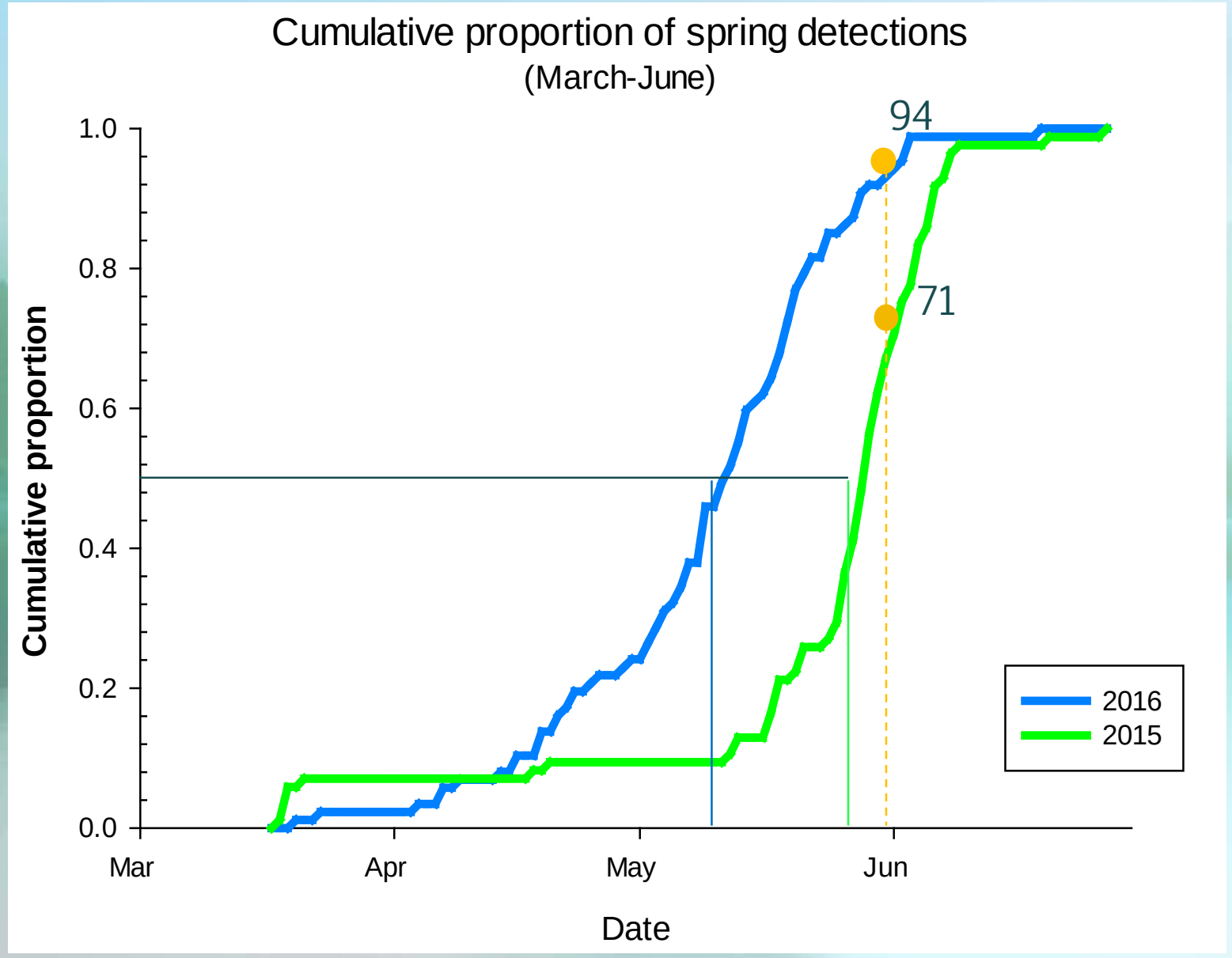
- Age-2 juveniles comprised the majority of fish exiting the reservoir (71%)

Juvenile Steelhead Migration Timing Past Foster Dam



- 84% of passage occurred from March-June

Juvenile Steelhead Migration Timing through Foster Dam



- 84% of passage occurred from March-June
- 2015 migration was later than 2016
- In spring period, 19% of passage occurred in June
- Spring of 2017 detections still to come

Juvenile Chinook Distribution in Lookout Point Reservoir
(June- Nov)

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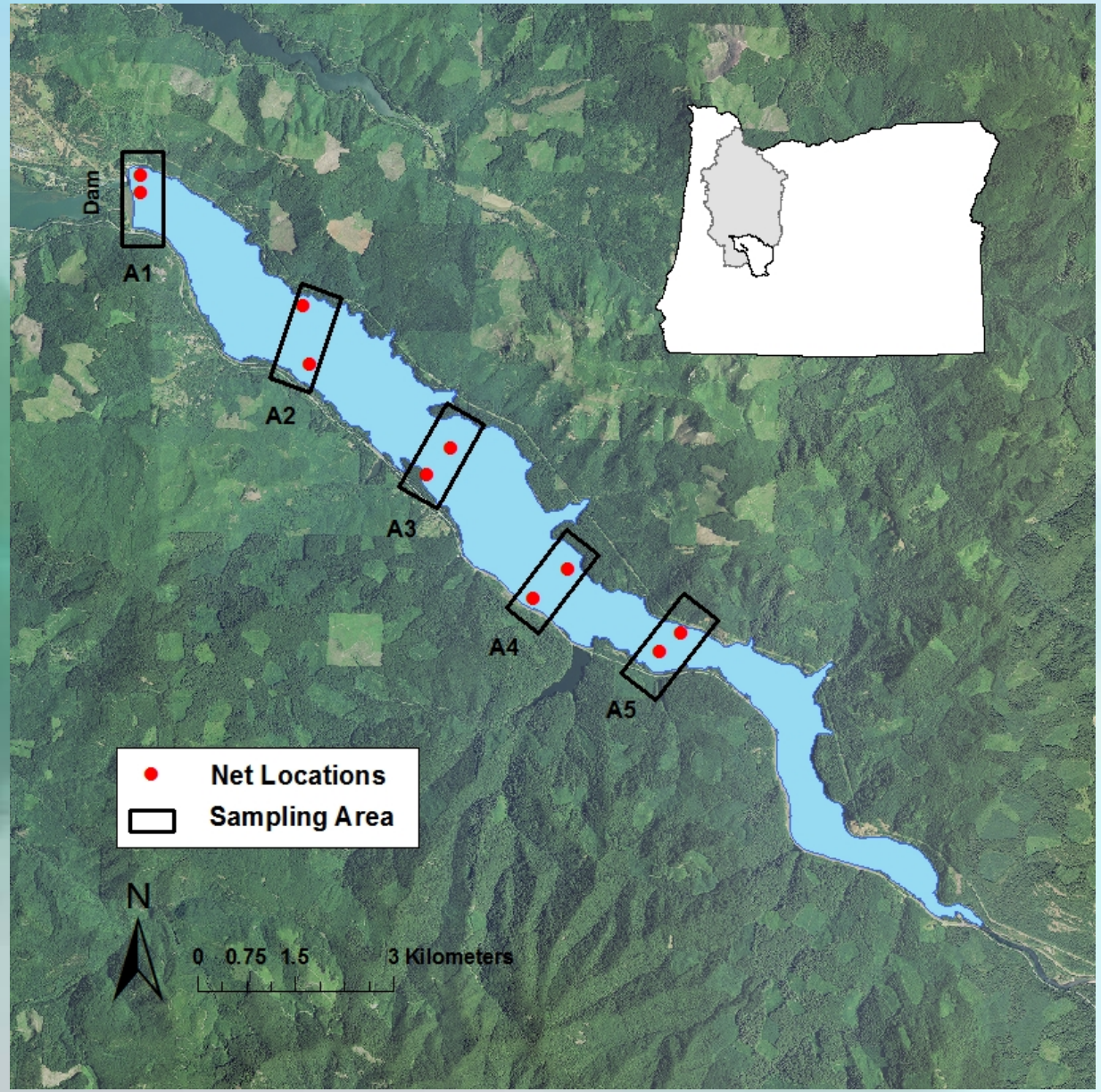

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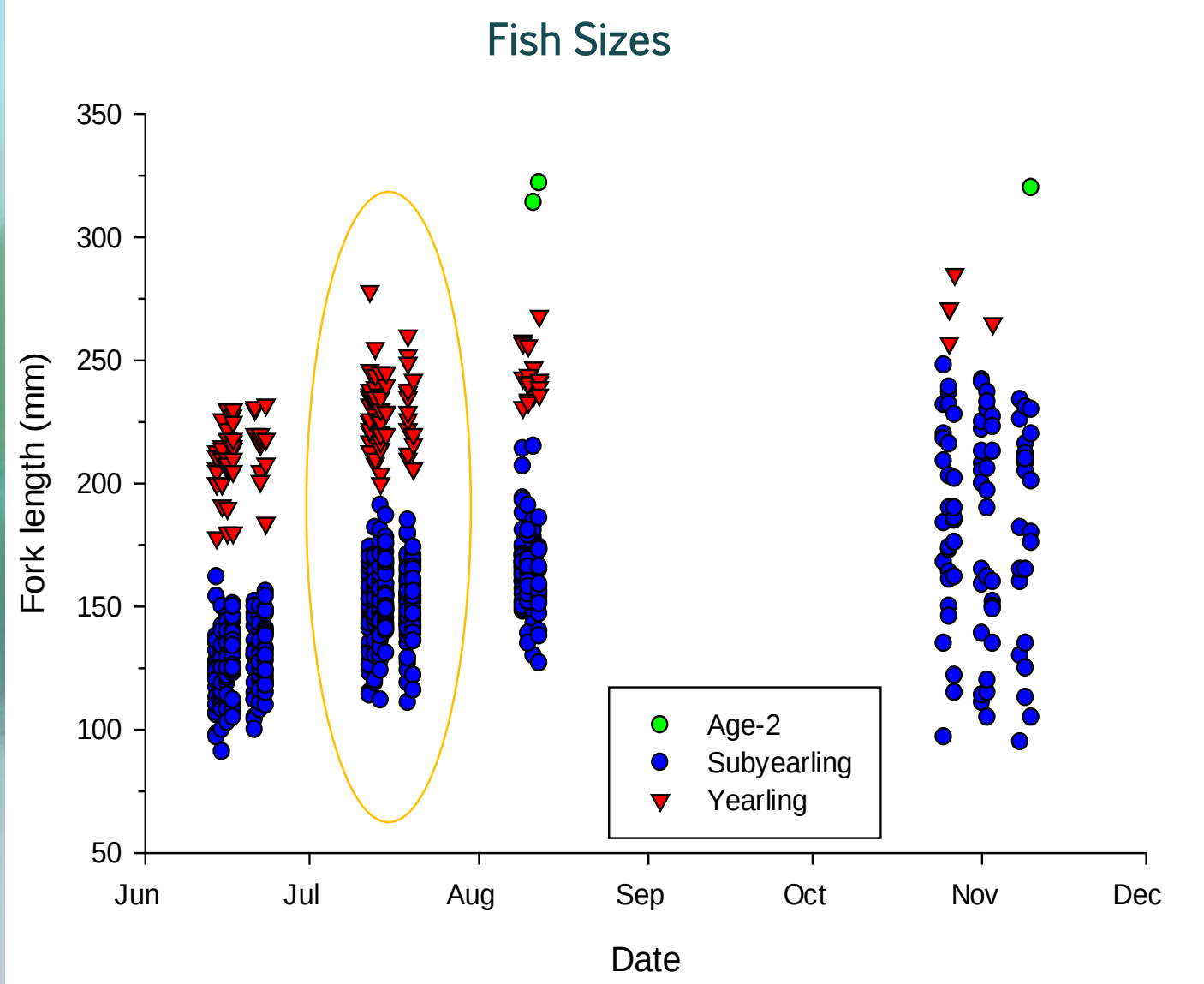
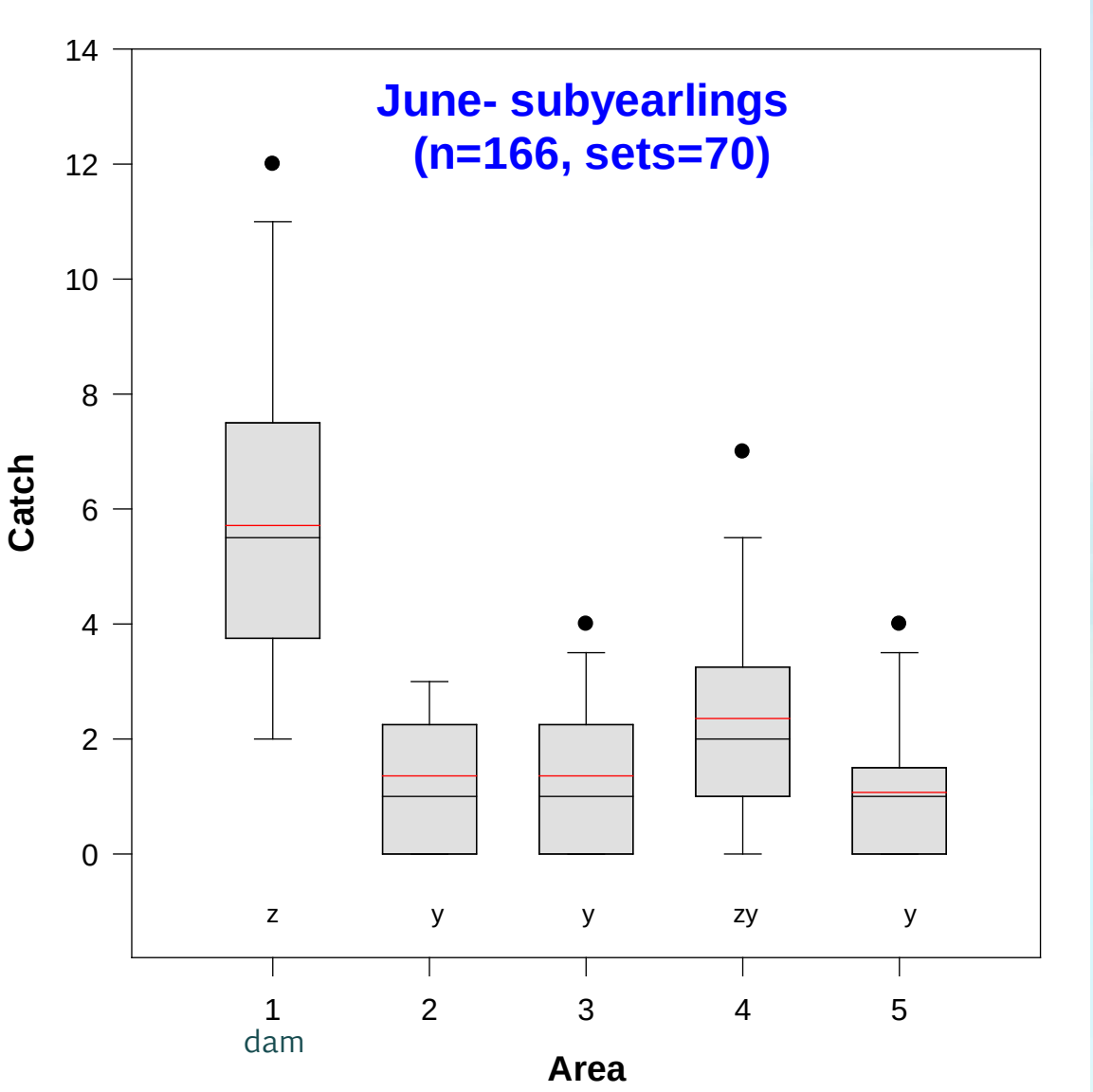


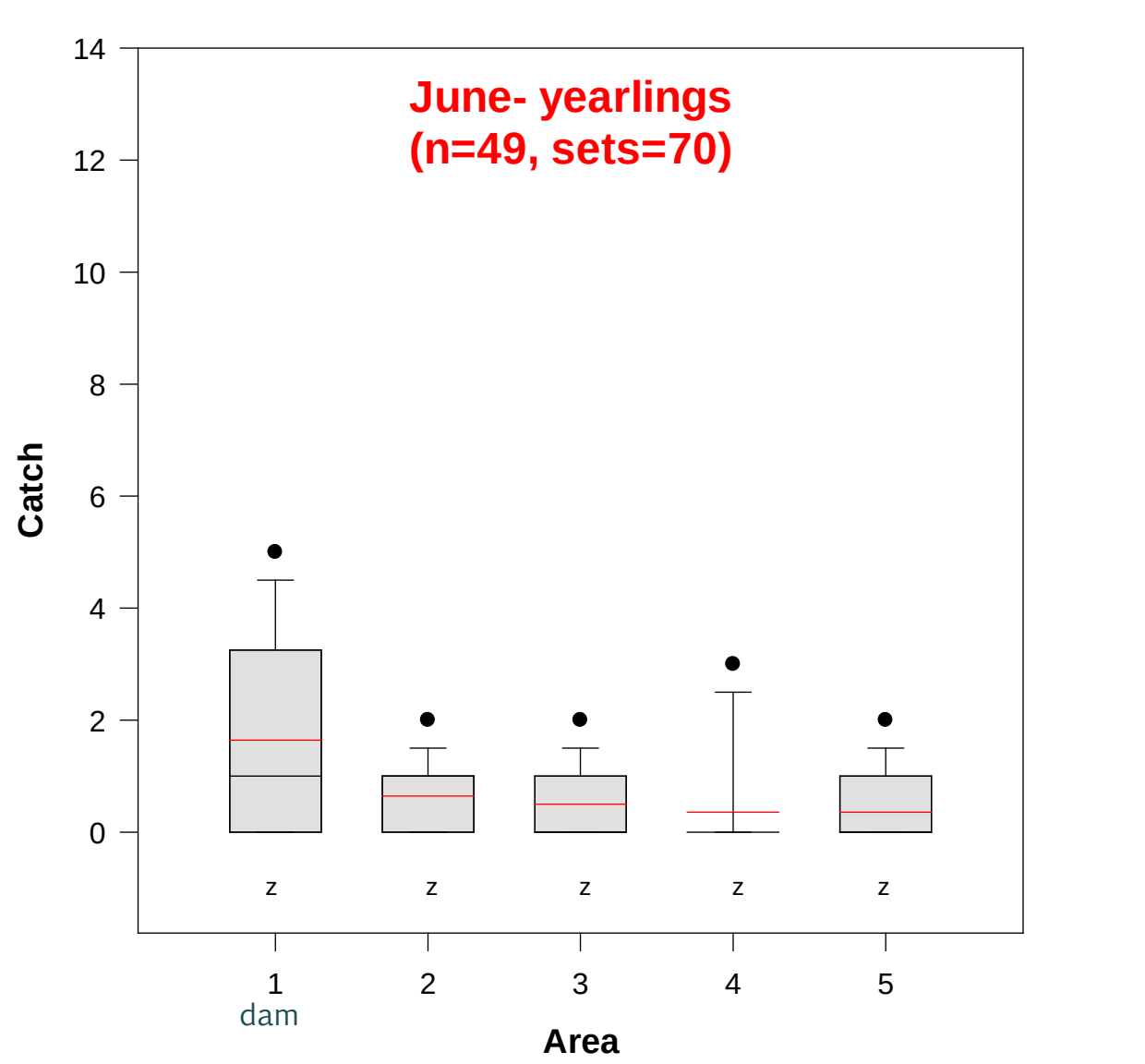
Yearlings comprised larger proportion of total catch compared to previous years:

July 2016: 20%
July 2013-14: 0-4%

Only 2 d of surface spill for yearlings compared to ≥20 d in previous years

Juvenile Chinook Distribution in Lookout Point Reservoir





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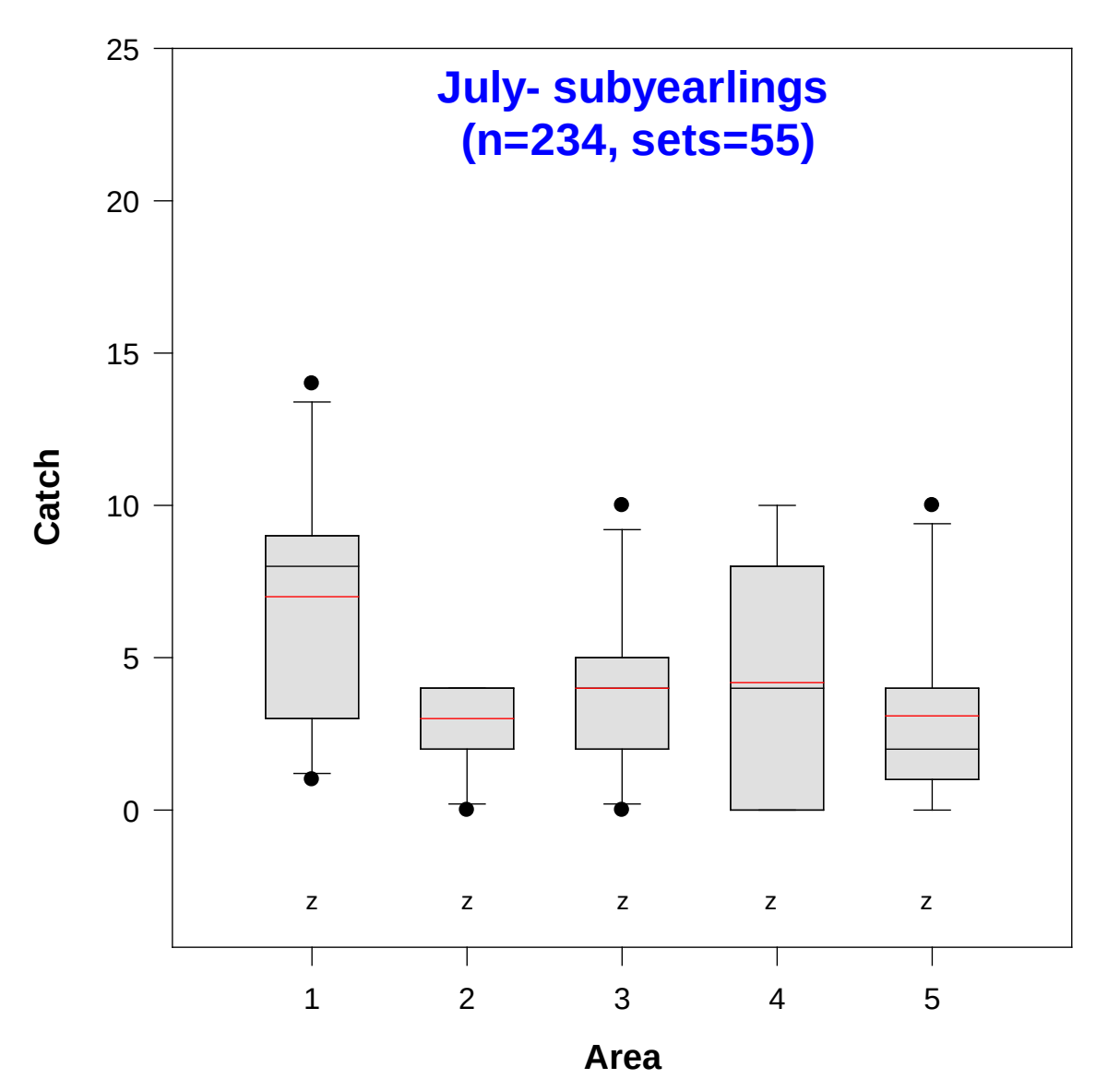

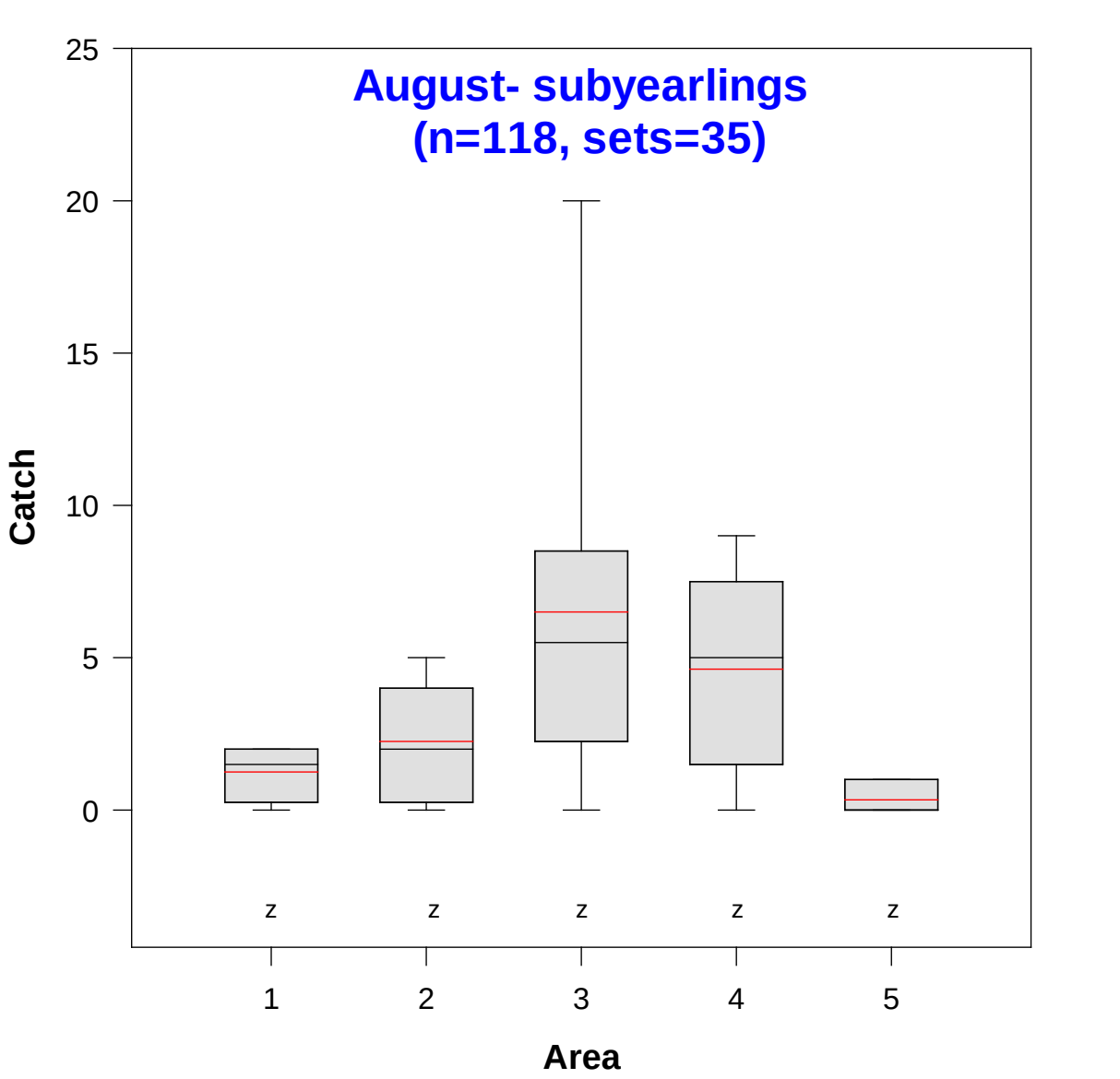

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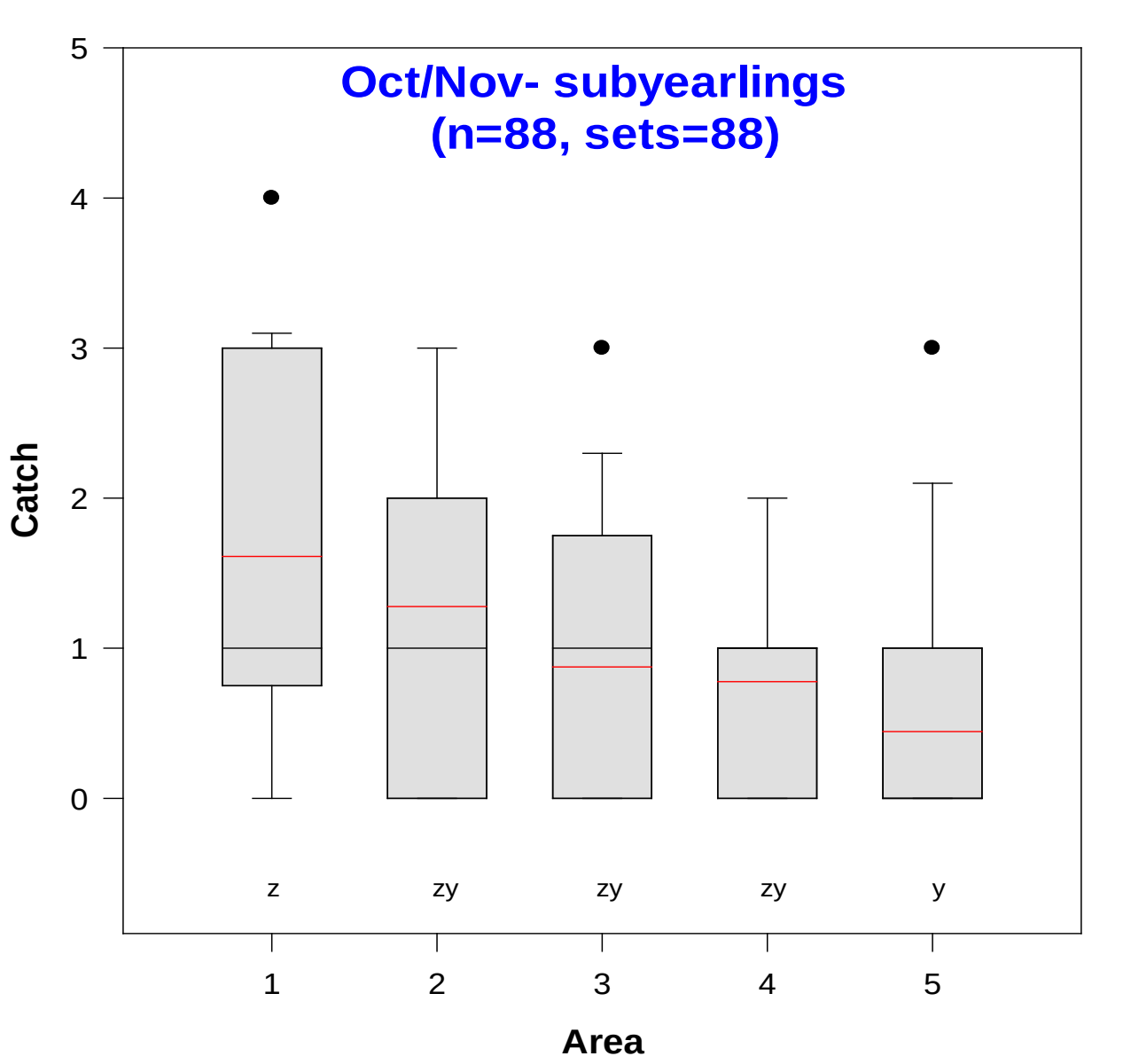
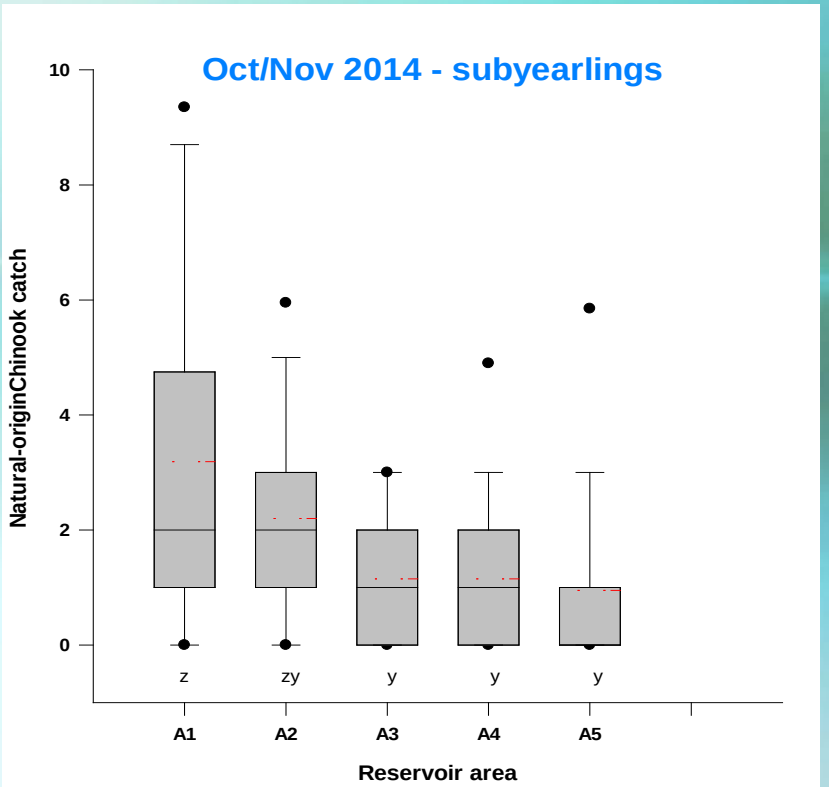


Subyearlings appear to start to congregate in the forebay in the fall

- Similar to previous years



Estuary Timing of Fall Parr Leaving Reservoirs

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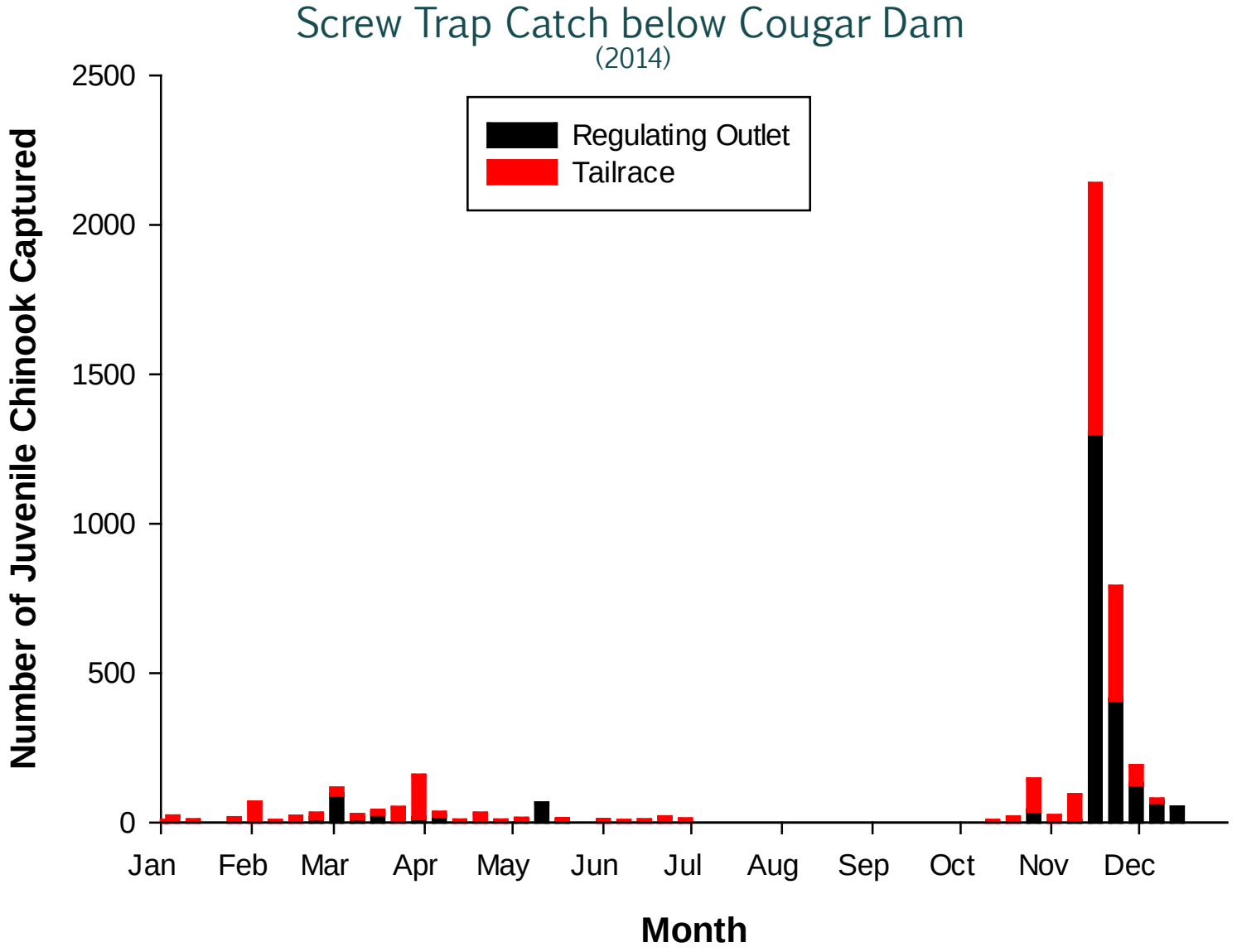

- Most juvenile Chinook salmon exit dams in the fall (Oct-Dec
- Where do they go from there?

Estuary Timing of Fall Parr Leaving Reservoirs

Juvenile Chinook Salmon PIT-tagged in the Fall (October-December)

	Tagged (2005-2014)		**Detections**			
Tag location	Rear type	FL (mm)	n	FL (mm)	Percent in fall (%)	FL in fall (mm)
Cougar	Reservoir	142	13	140	**92**	142

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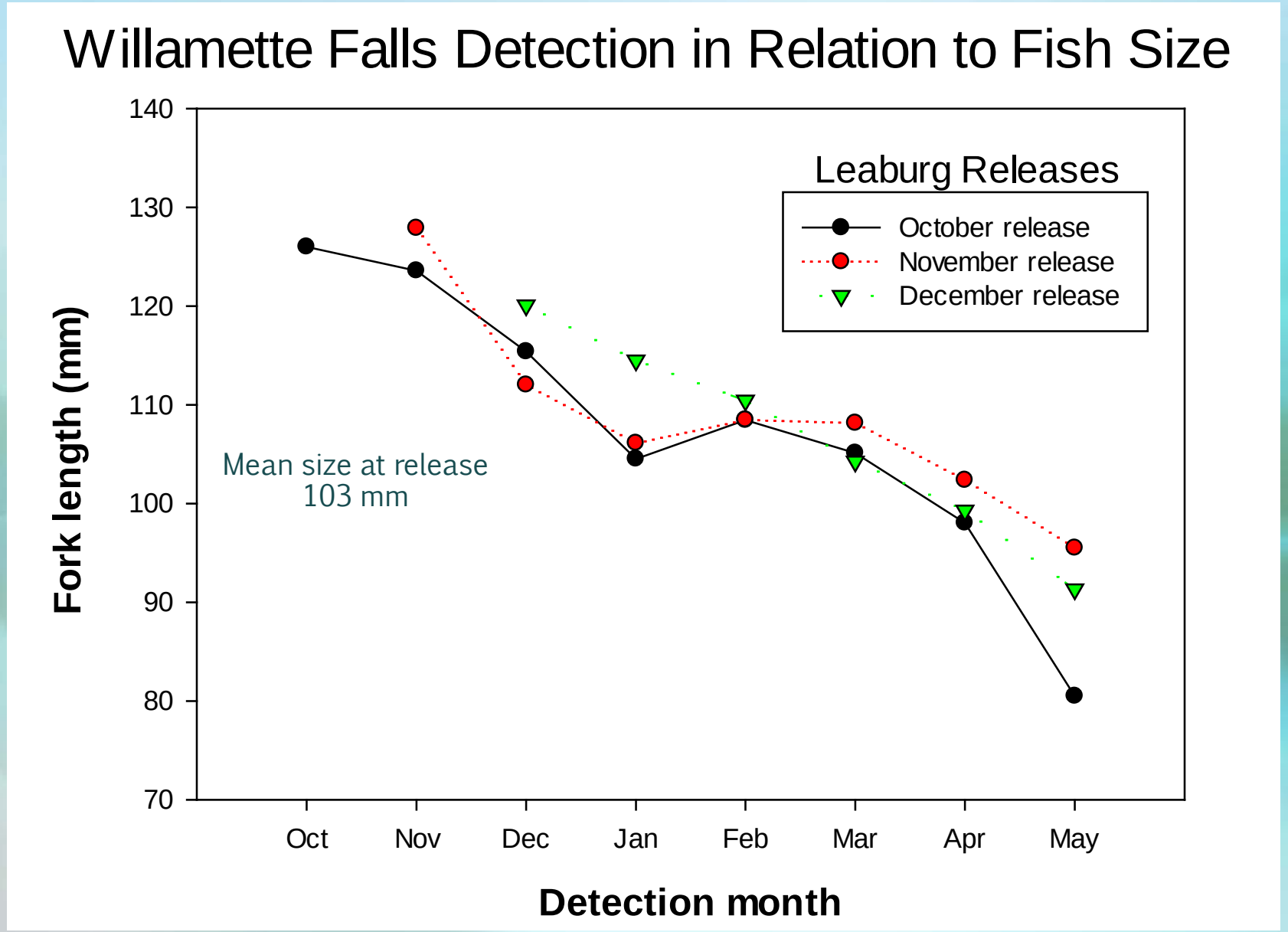
Leaburg	Stream	103	607	104	**19**	117

* Tagged 2011-2014

- Reservoir fish are almost exclusively using one life-history pathway
- Fish size appears to influence the time it takes for a fall parr to reach the Columbia Estuary

Estuary Timing of Fall Parr



Summary

Steelhead above Foster

- Age-2 juveniles comprised the majority of fish exiting the reservoir (71%)
- 84% of passage occurred from March-June
  - with 19% passing after June 1st

Chinook Distribution in Lookout Point Reservoir

- Yearlings comprised larger proportion of 2016 catch compared to previous years
- More subyearlings in forebay in June and again in the fall

Estuary Timing of Chinook Fall Parr

- Reservoir fish are almost exclusively using one life-history pathway
  - with >90% reaching estuary in the fall
- Larger size of reservoir Chinook is a likely factor in timing to the Columbia Estuary

Acknowledgments

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Greg Gilham
Meghan Horne-Brine
Amy Anderson
Kevin Stertz

Questions?

http://oregonstate.edu/dept/ODFW/willamettesalmonidrme