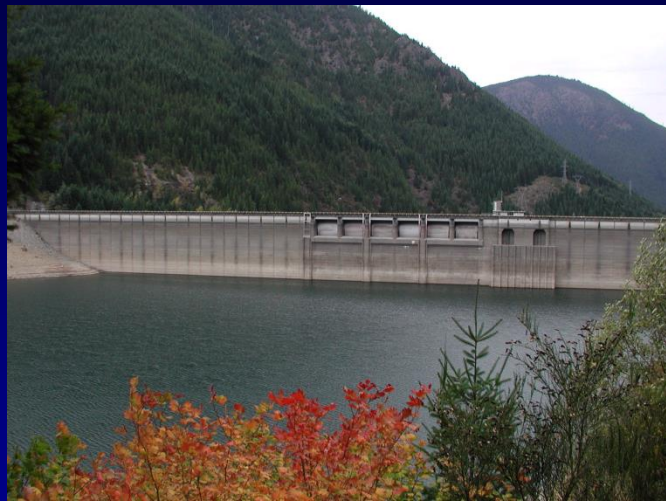


PERFORMANCE OF HATCHERY SPRING CHINOOK SALMON RELEASED IN THE FALL AND SPRING

Cameron Sharpe & David Hewlett
Oregon Department of Fish and Wildlife
2015 Fish Culture Concepts
December 1-3 2015



Willamette Biological Opinion Hatchery Research, Monitoring, and Evaluation



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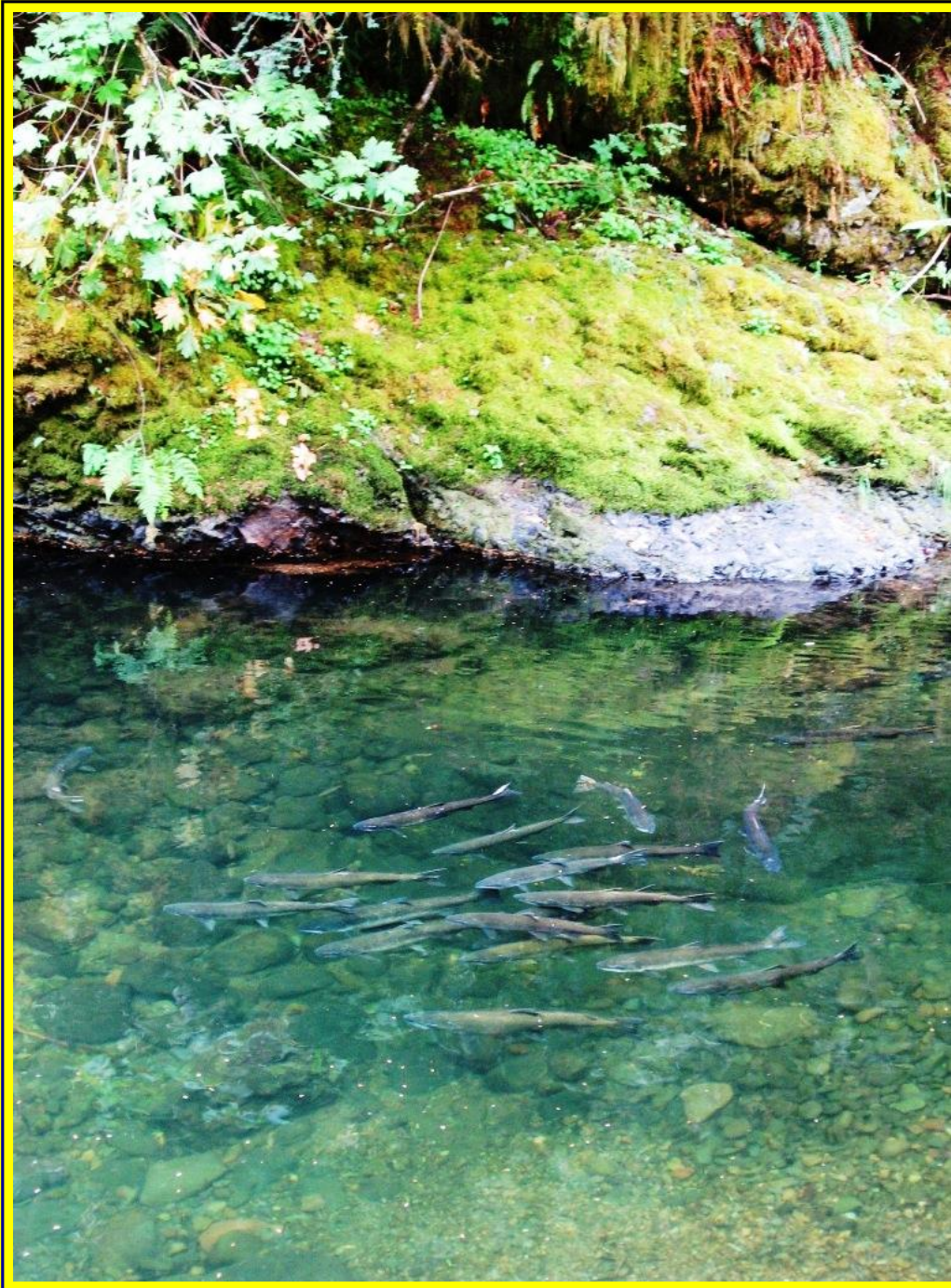
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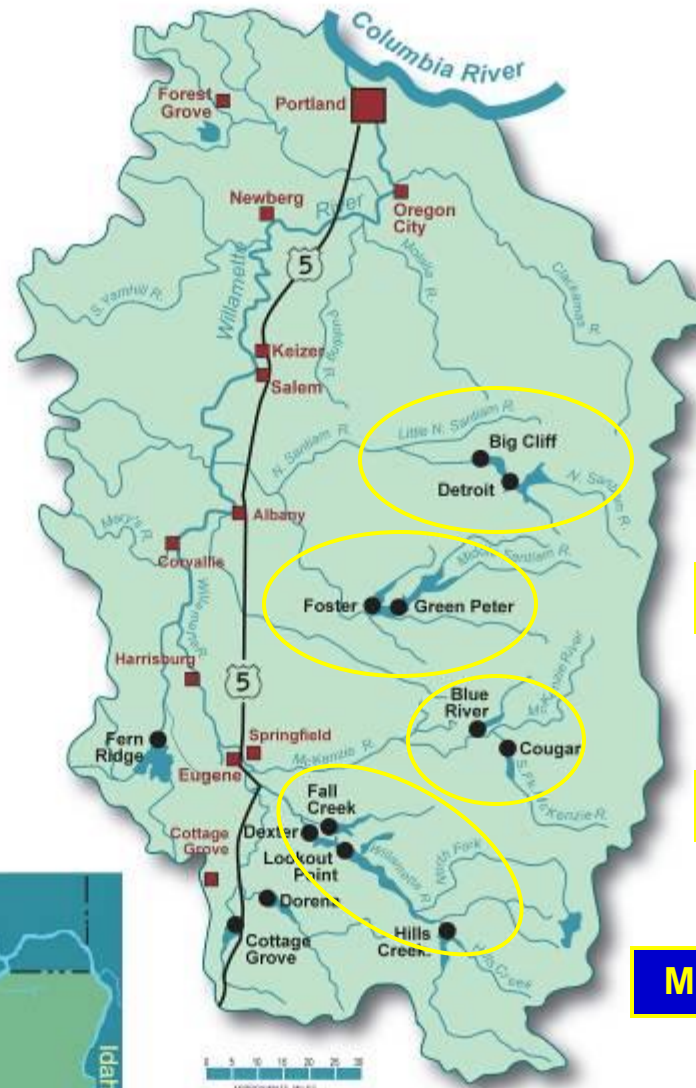


- Hatchery RME Activities
 - Monitoring hatchery operations and conducting research focused on hatchery programs
 - Spawning ground surveys (upstream & downstream of dams),
 - Distribution & abundance of redds, carcass sampling, proportion hatchery-origin spawners (pHOS) prespawn mortality, straying, diversity

The Willamette Basin



US Army Corps
of Engineers
Portland District



North Santiam

South Santiam

McKenzie

Middle Fork

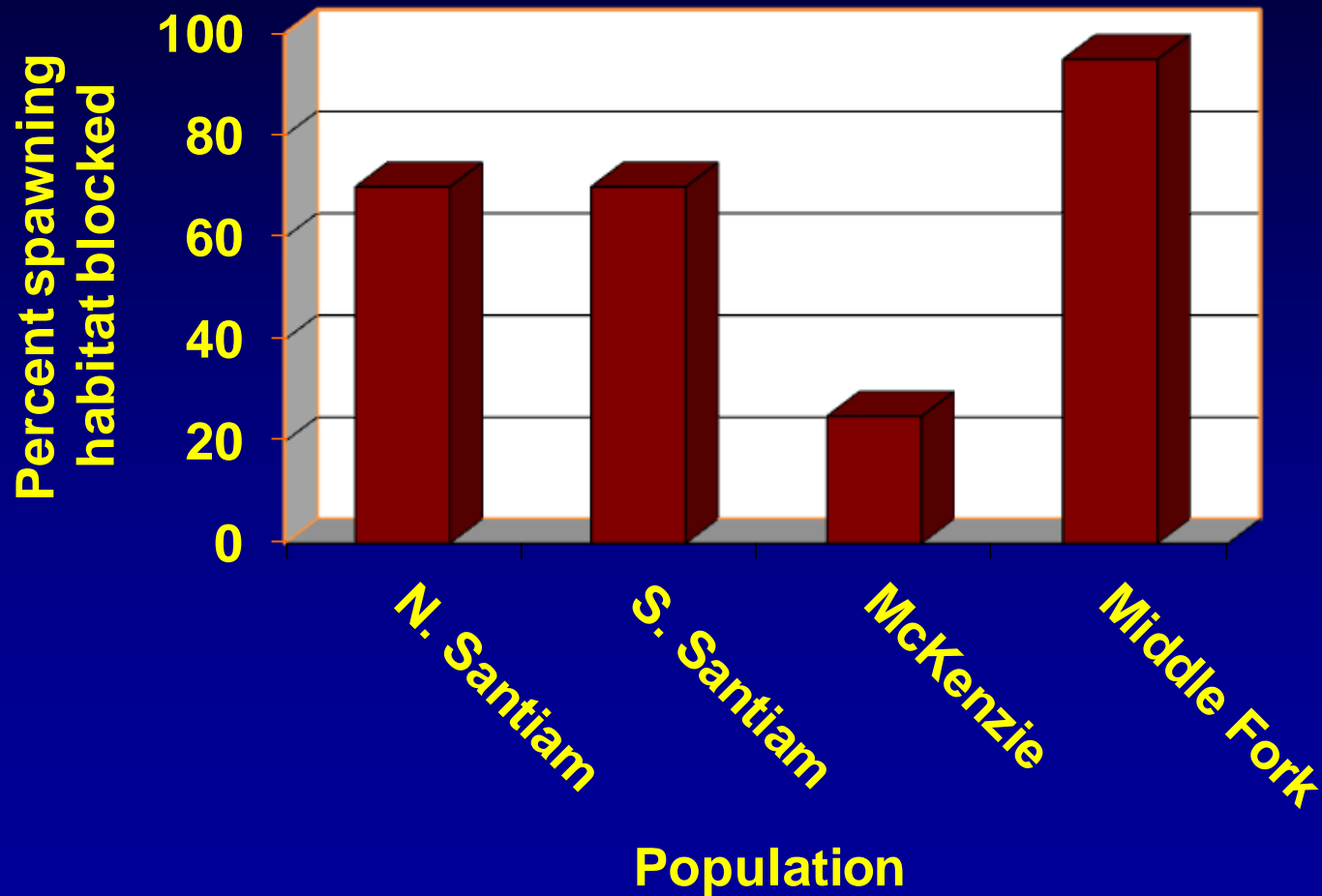


Monitoring Guidelines

(Crawford and Rumsey 2011)

- **Guidance regarding threats due to hatchery production**
 - **Determine annually the percent hatchery origin spawners (pHOS) ... toward reaching HGMP targets**
 - **Every hatchery should monitor the spatial and temporal distribution of juvenile fish released from the program**

Chinook spawning habitat loss due to lack of passage at dams



Methods



Redd Surveys

Carcass Sampling

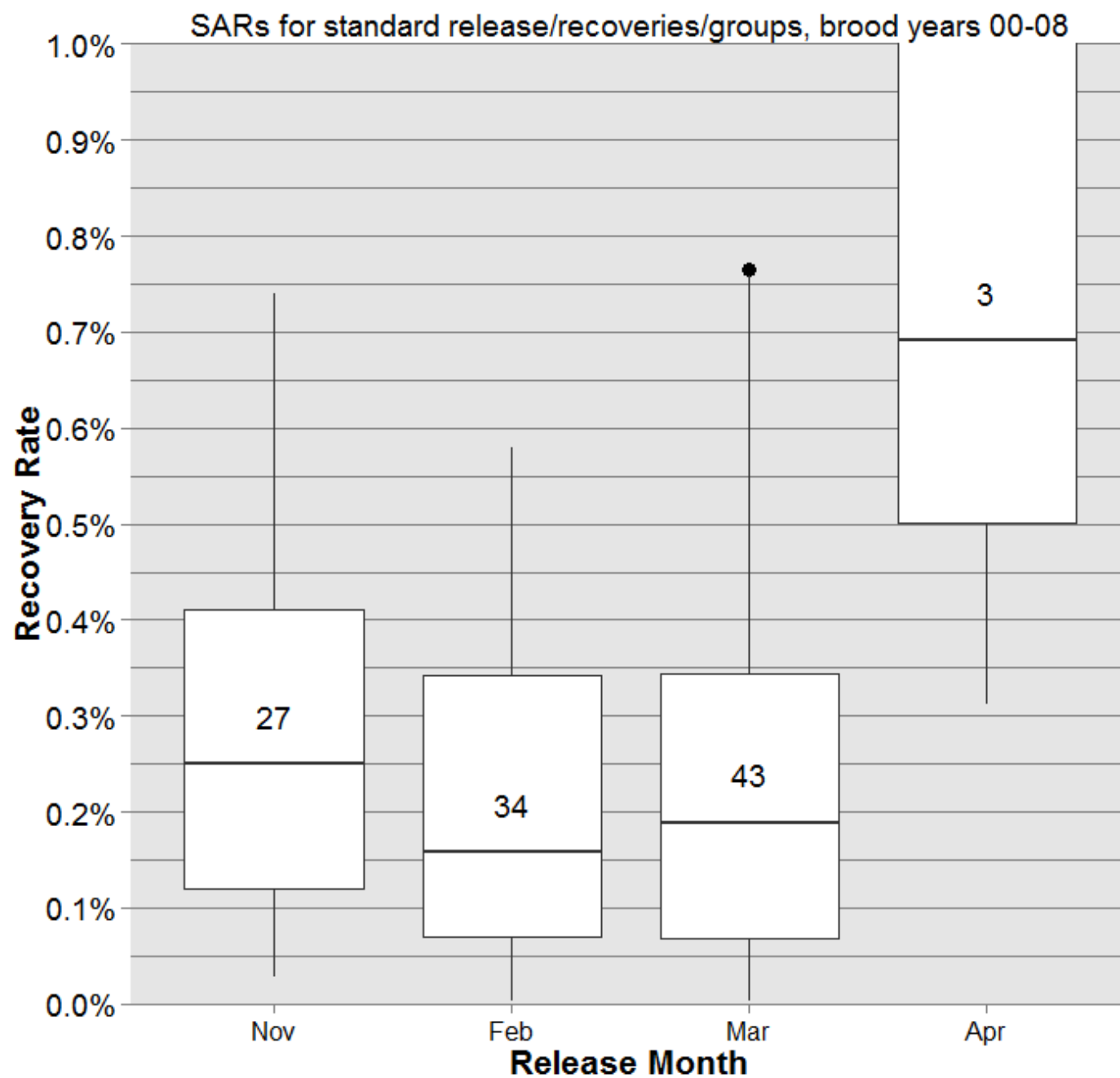


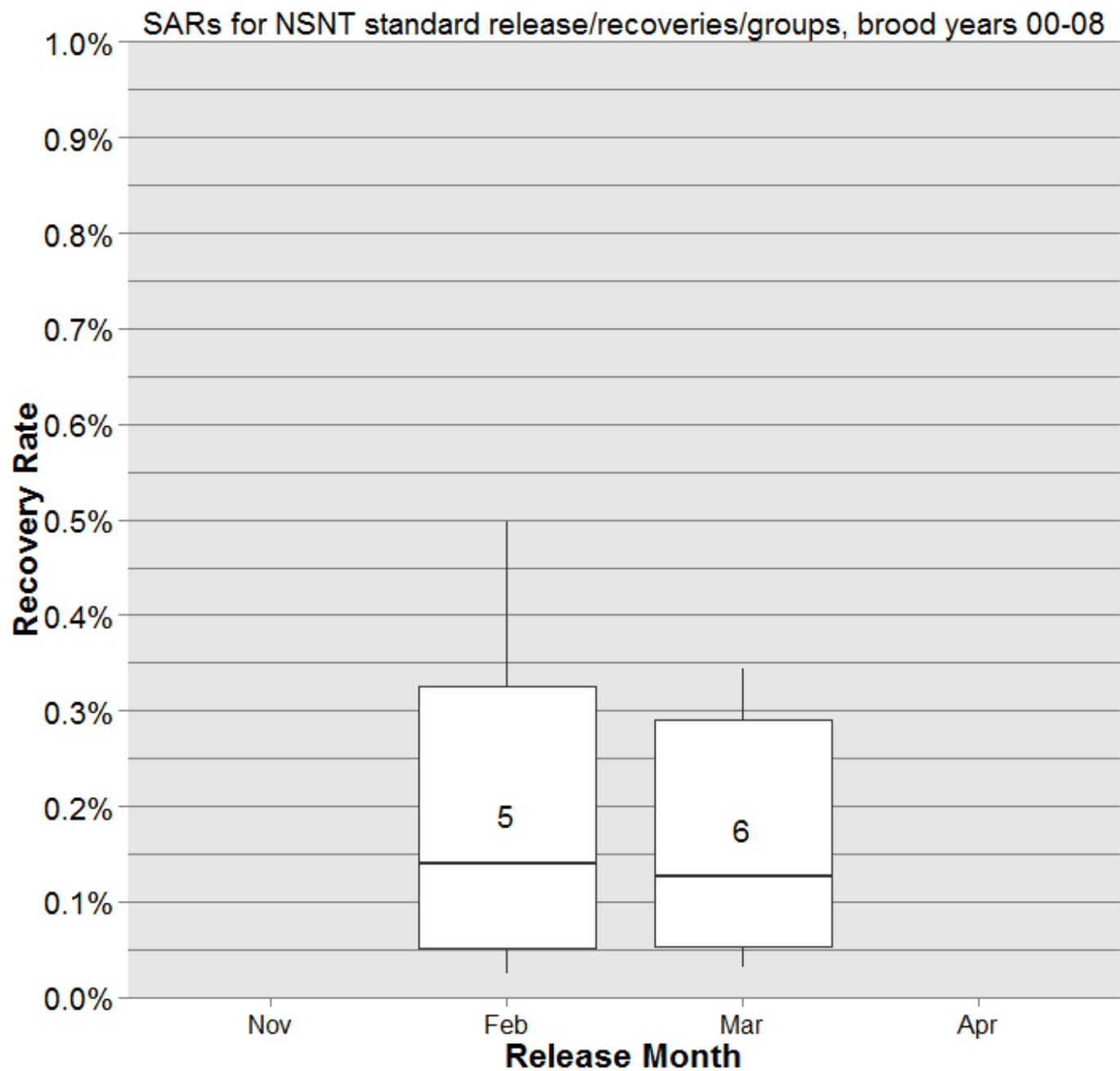


Species
Sex
Size
Fin Clips
Floy Tags
CWTs
PIT-tags
Radiotags
Scales
DNA
Disposition

Release date and...

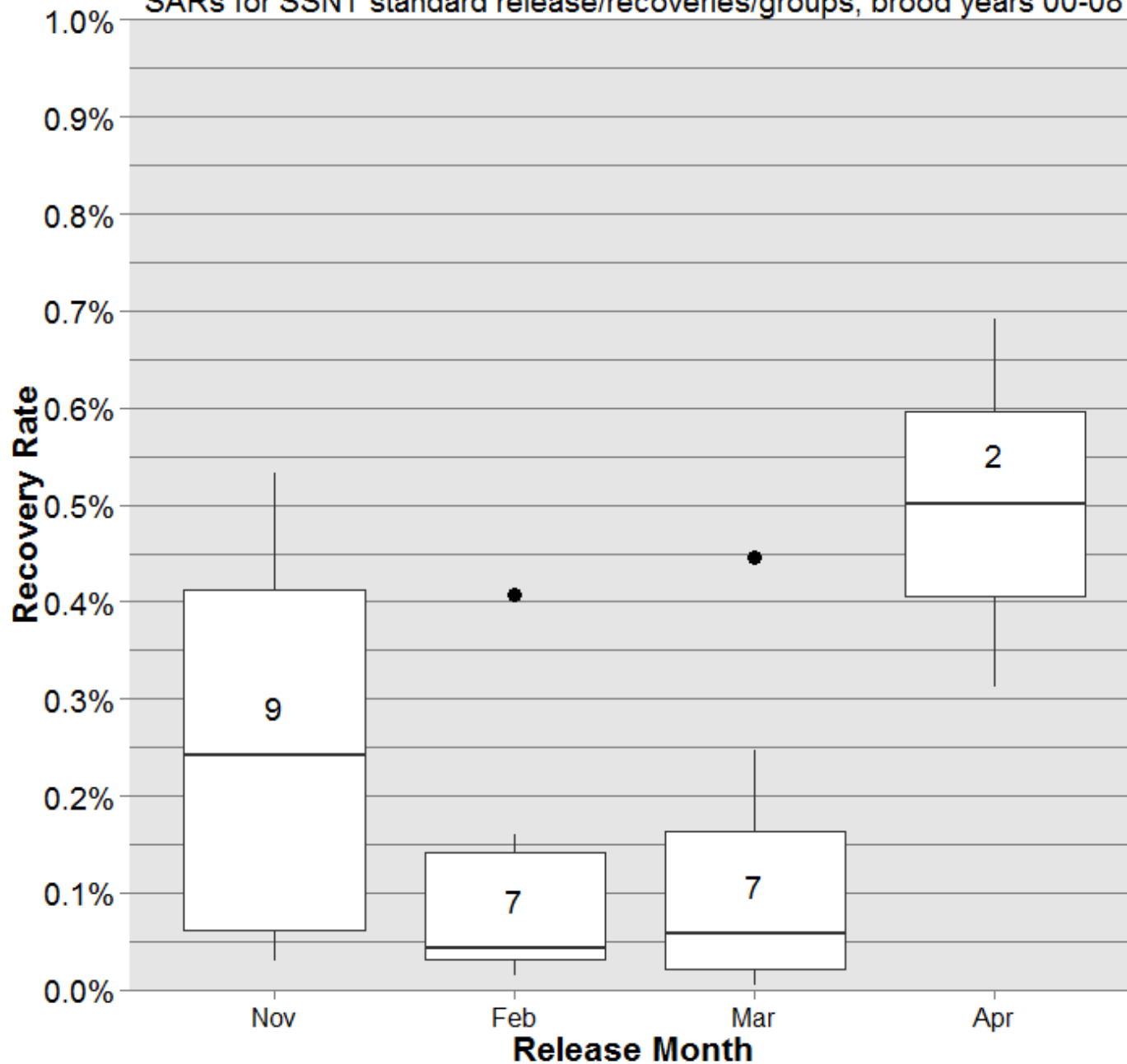
- SARs
- Straying
- Shifts in age structure



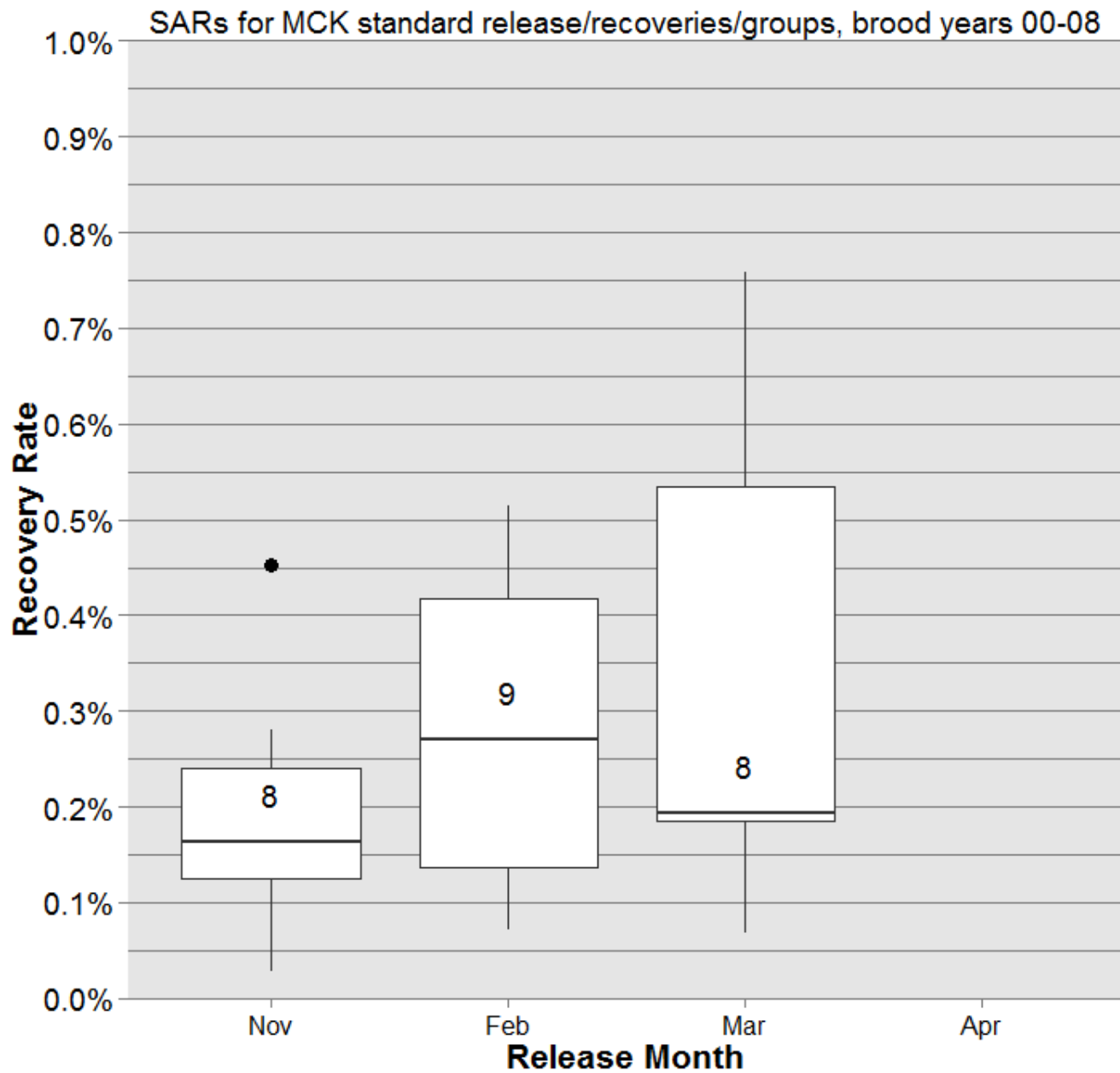


North
Santiam

SARs for SSNT standard release/recoveries/groups, brood years 00-08

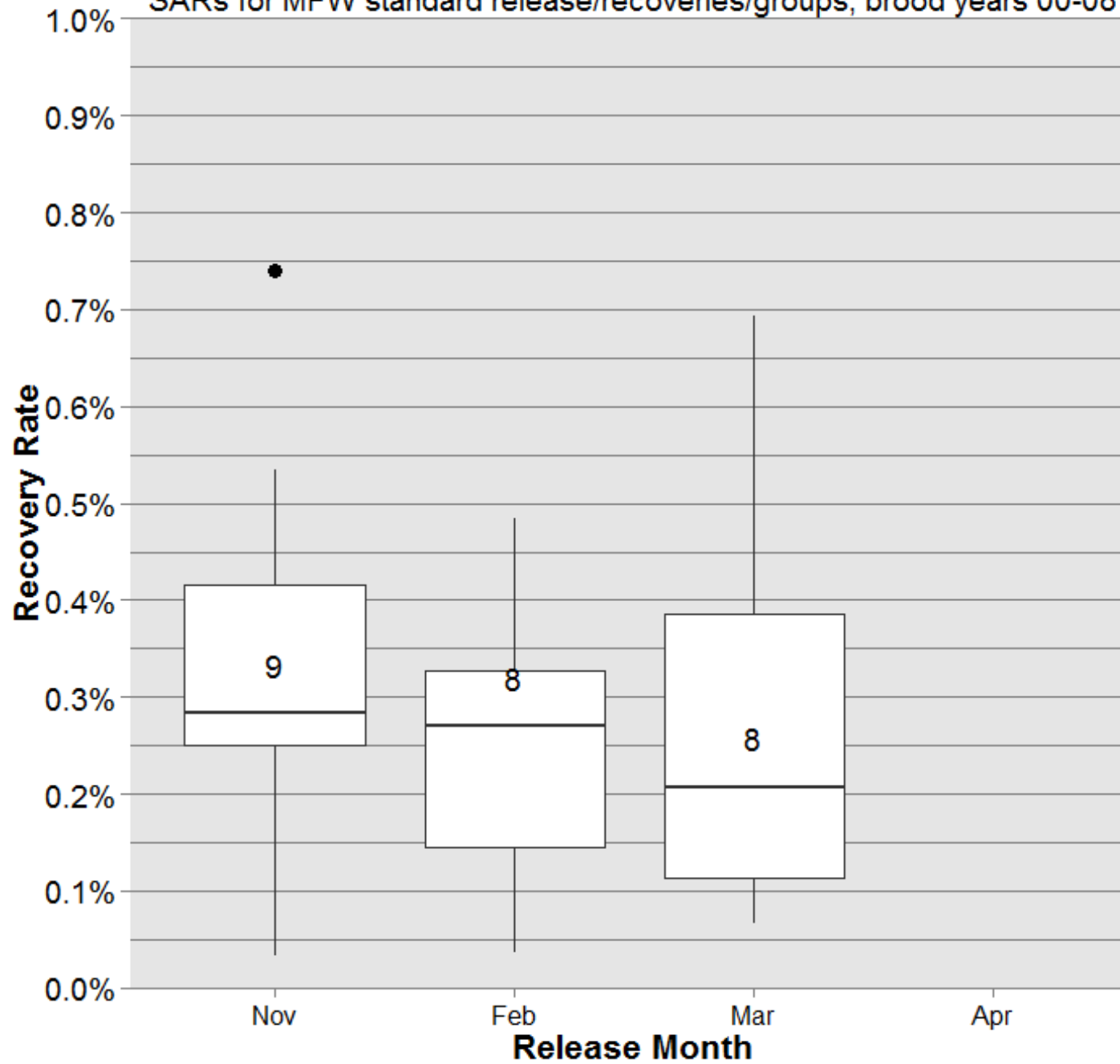


South
Santiam



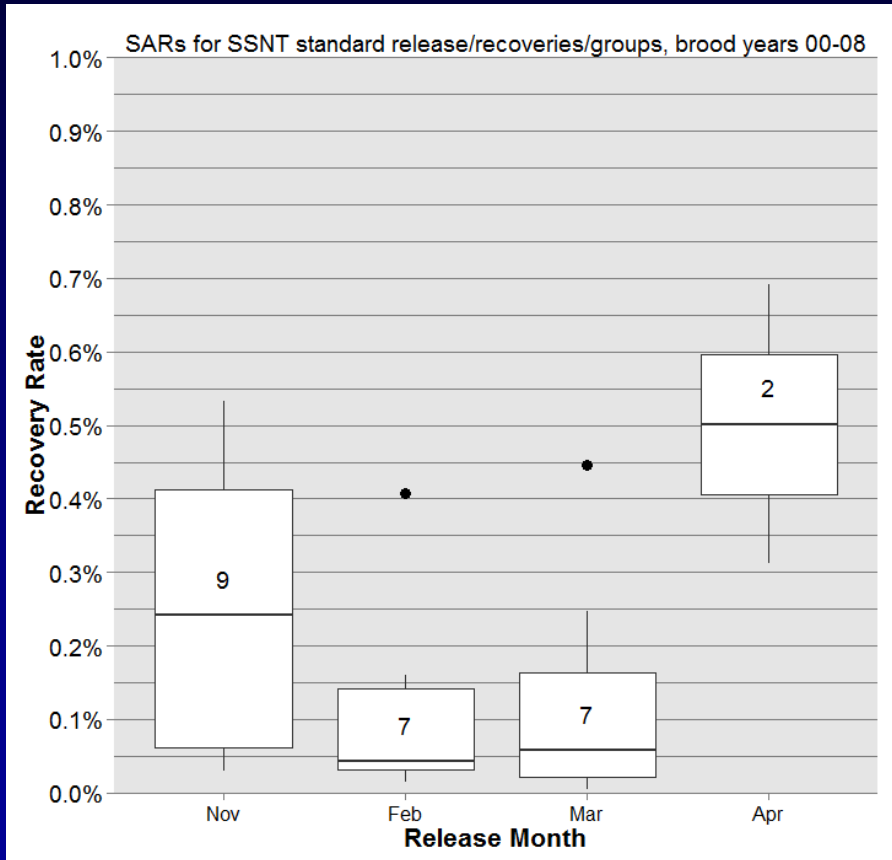
McKenzie

SARs for MFW standard release/recoveries/groups, brood years 00-08

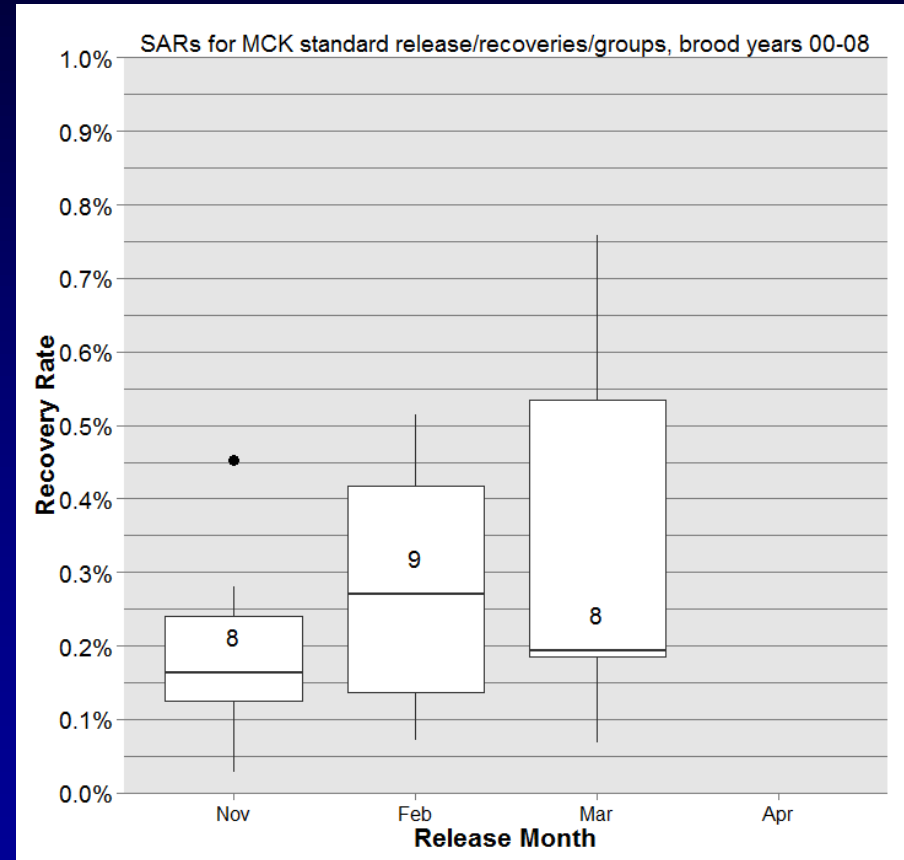


Middle
Fork

South Santiam

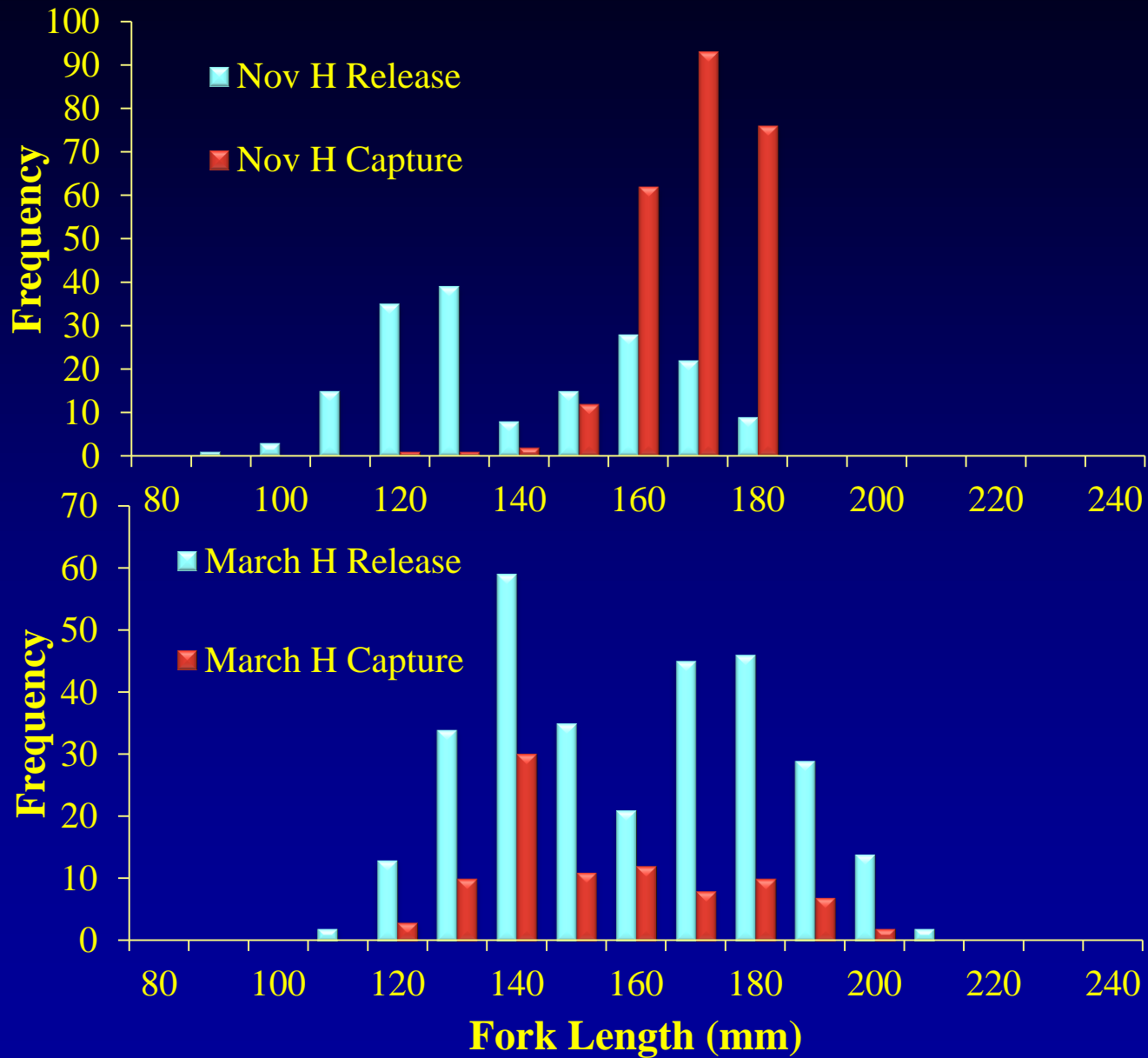


McKenzie

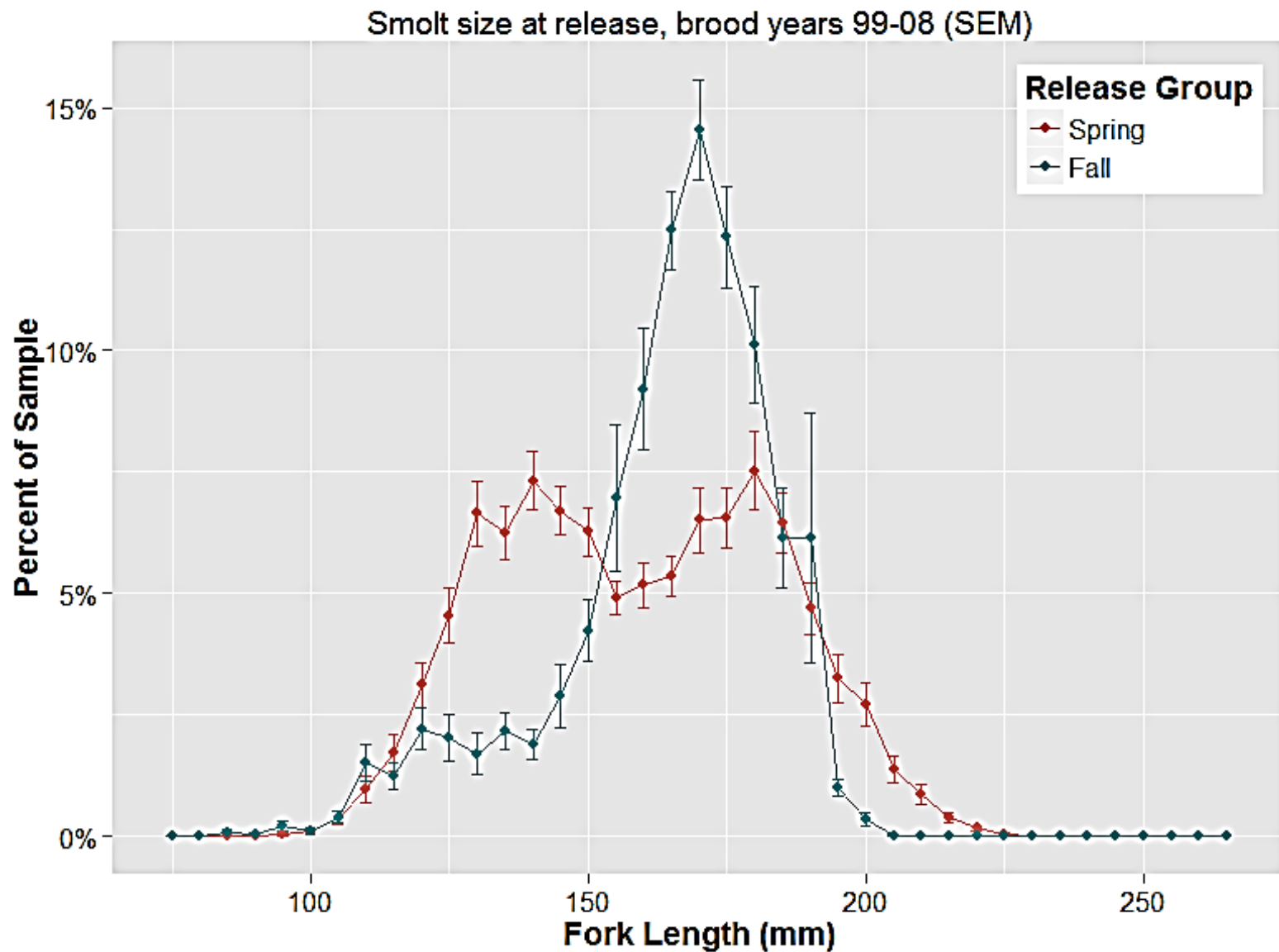




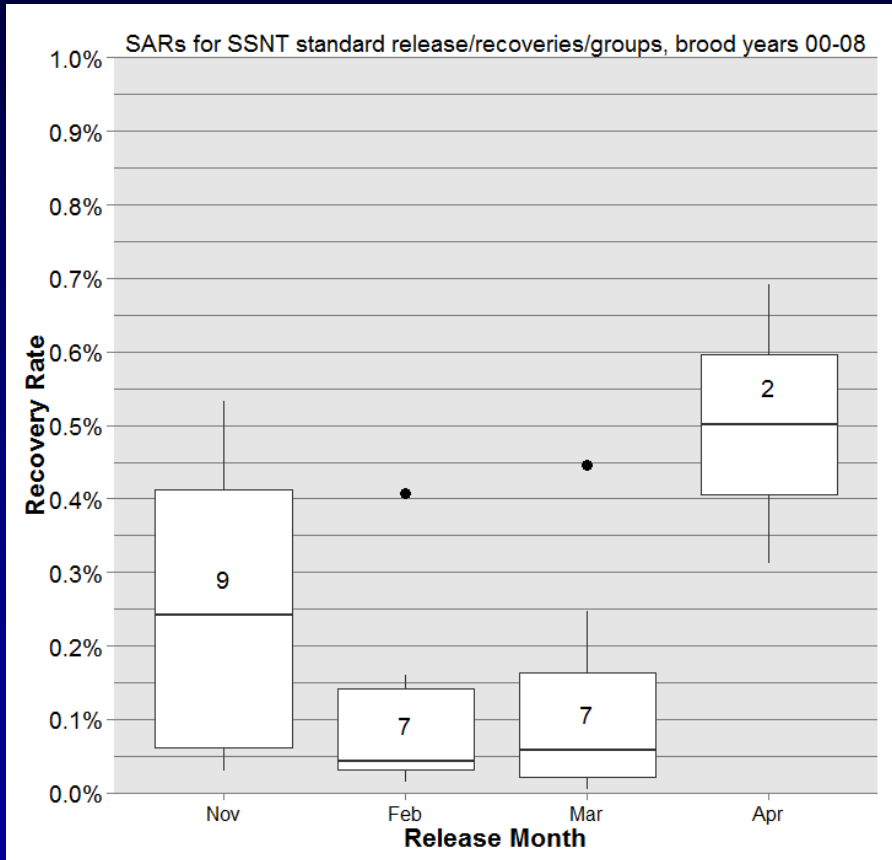
McKenzie



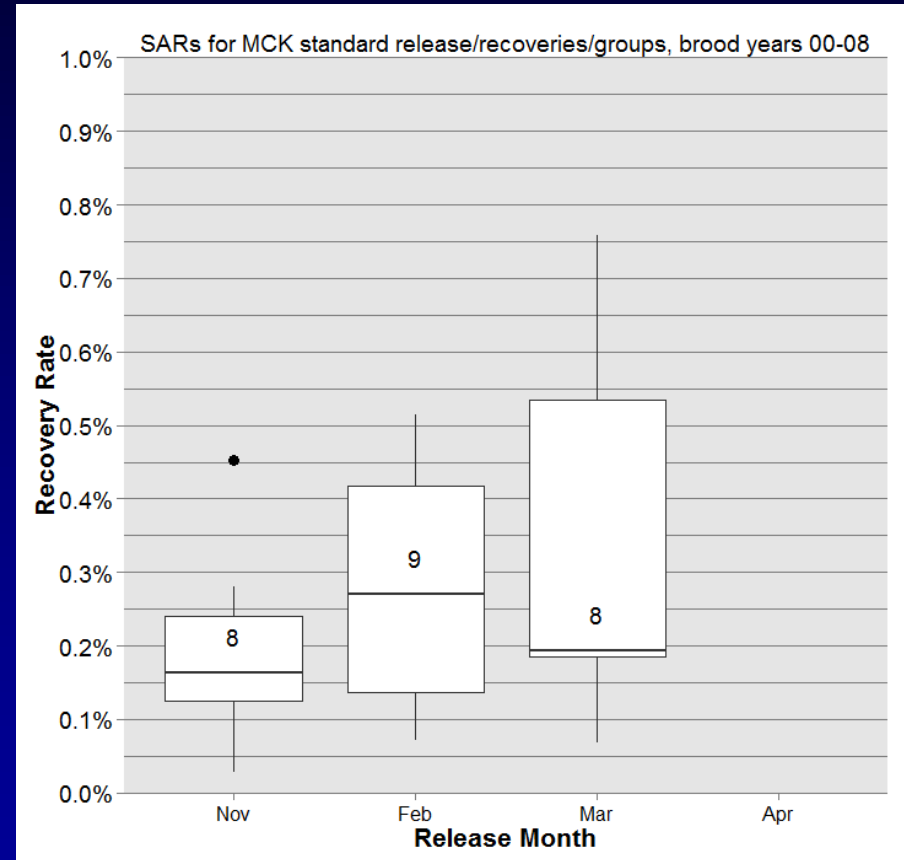
South Santiam



South Santiam



McKenzie



Fall Releases and Straying

- Johnson and Friesen. 2010. Spring Chinook Salmon Hatcheries in the Willamette Basin: Existing Data, Discernable Patterns and Information Gaps.

“... fall releases were 0.61 as likely...to home as fish released during January through March”

Release Timing	Recovery at McKenzie Hatchery	Recovery on McKenzie Spawning Ground Survey	Percent Recovery on Spawning Ground Survey
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Fall Release

959

79

8%

Spring Release

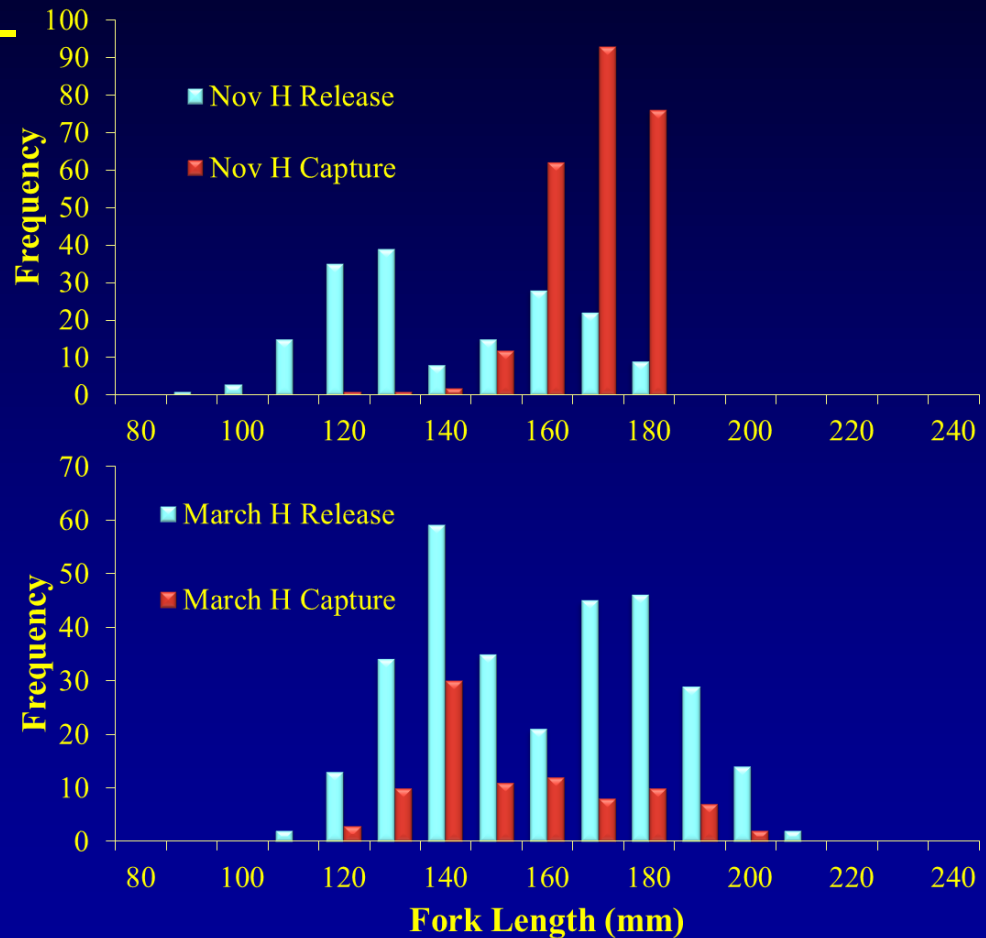
1,497

66

4%

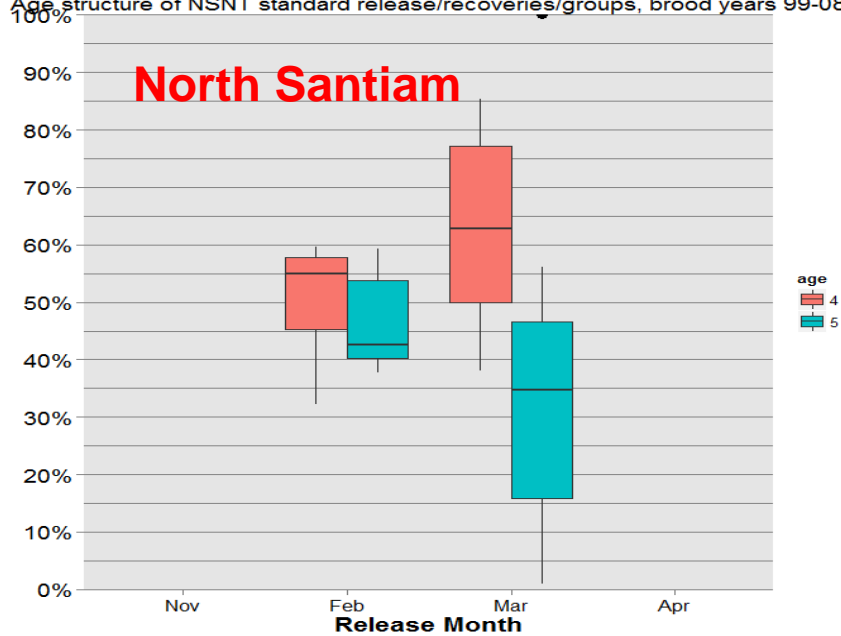
A Hypothesis

- Fall release of out-of-size fish promotes imprinting to the river reaches instead of the hatchery and thus increases pHOs

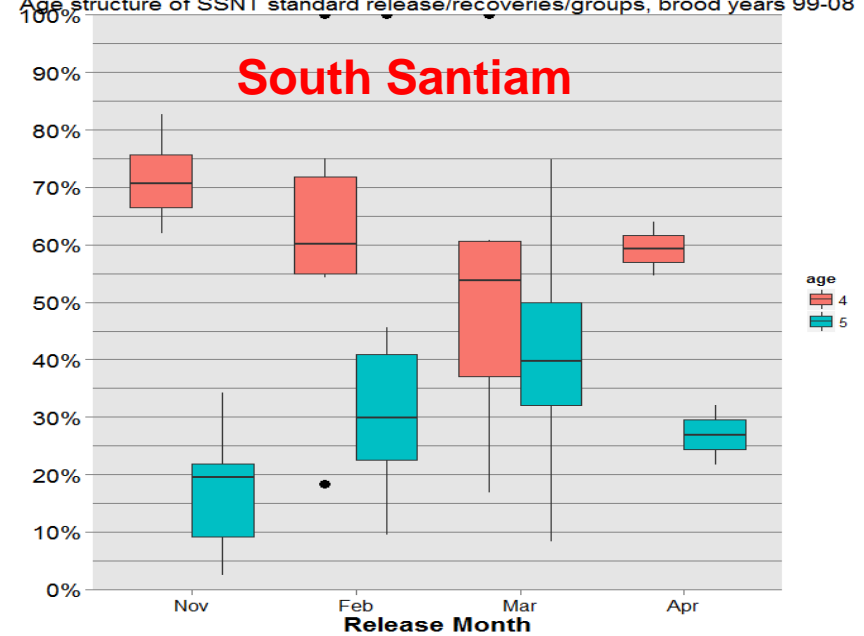


Fall Releases and Shifts in Adult Age Structure

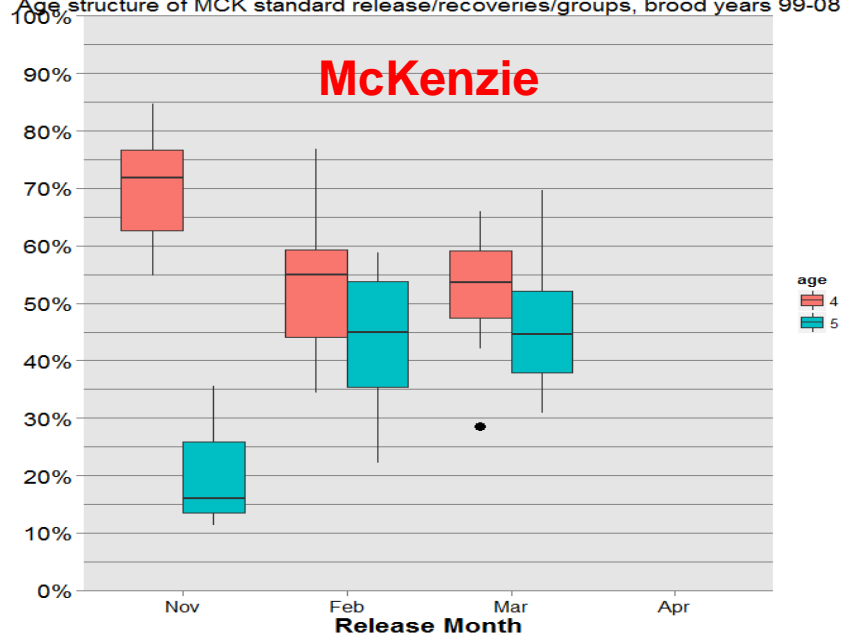
Age structure of NSNT standard release/recoveries/groups, brood years 99-08



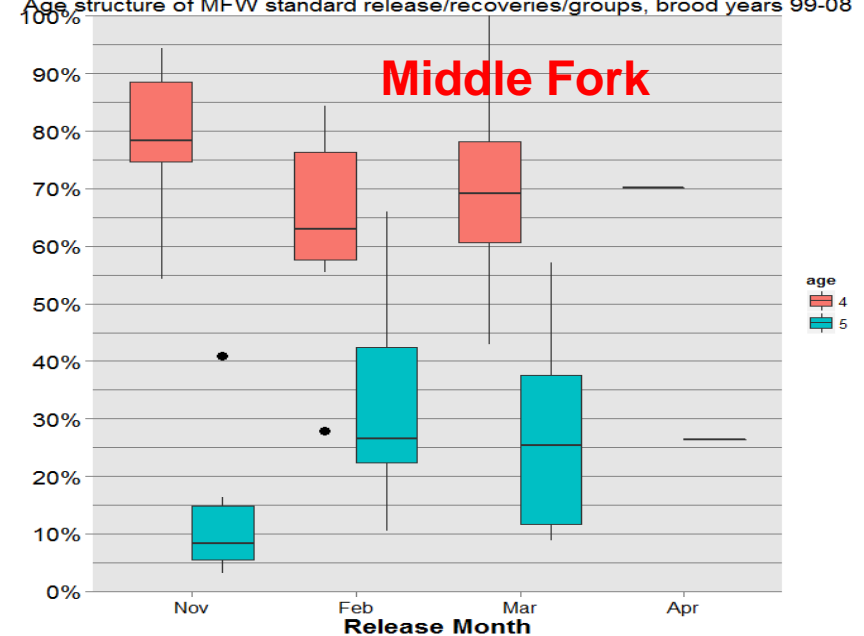
Age structure of SSNT standard release/recoveries/groups, brood years 99-08

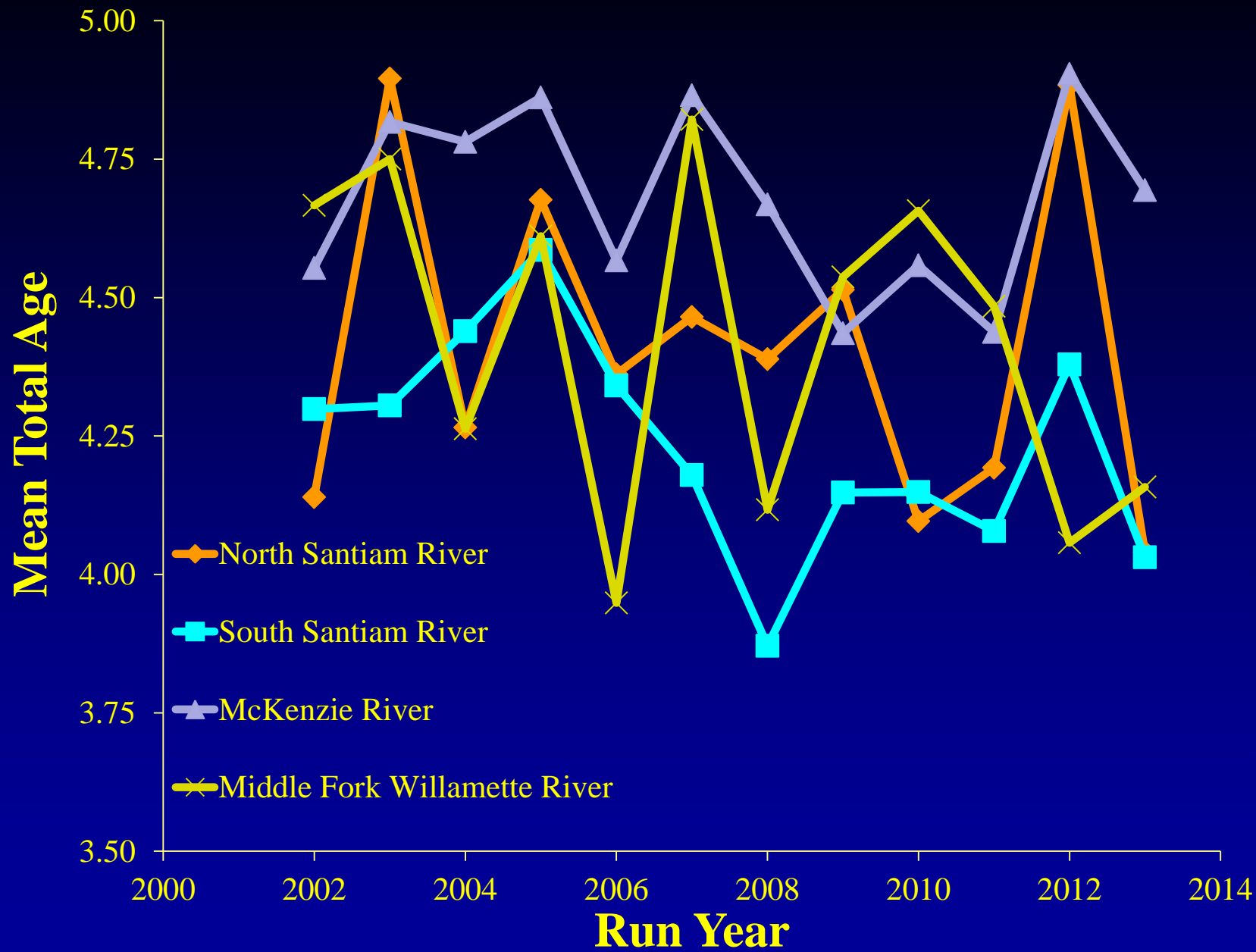


Age structure of MCK standard release/recoveries/groups, brood years 99-08



Age structure of MFW standard release/recoveries/groups, brood years 99-08





Summary

- Fall releases:
 - Can be but aren't always associated with lower SARs
 - Where low SARs are apparent is when fish are out of size
 - Are associated with increased straying
 - Result in shifts in age structure of returning adults towards returns of smaller, younger fish.

A large trout with dark spots is swimming in a shallow, rocky stream. The water is clear, and the rocks are covered in moss. The trout is the central focus of the image, with its head and body clearly visible. The word "Questions?" is overlaid in red text on the upper part of the image.

Questions?