

Performance of Chinook reared in circular re-use and raceway systems

Josh Murauskas, Sam Dilly, Ian Adams, Todd Pearsons

2012 NWFCC

December 12, 2012



CHELAN COUNTY



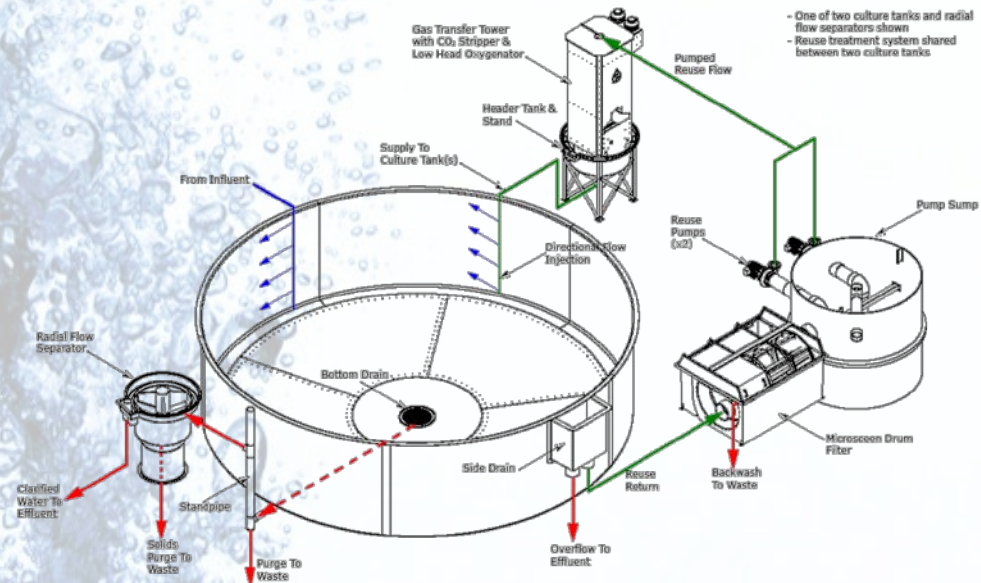
Overview

- What vessels?
- What is performance?
- How'd they do?
- Implications...



Rearing vessels

- Standard raceways
 - 30.5 × 3.0 m
 - 102k, 14 FPP, 0.25 DI
- Partial water re-use
 - 9 m dual-drain Cornell
 - 150k, 14 FPP, 0.25 DI
 - **> 85% less water use**

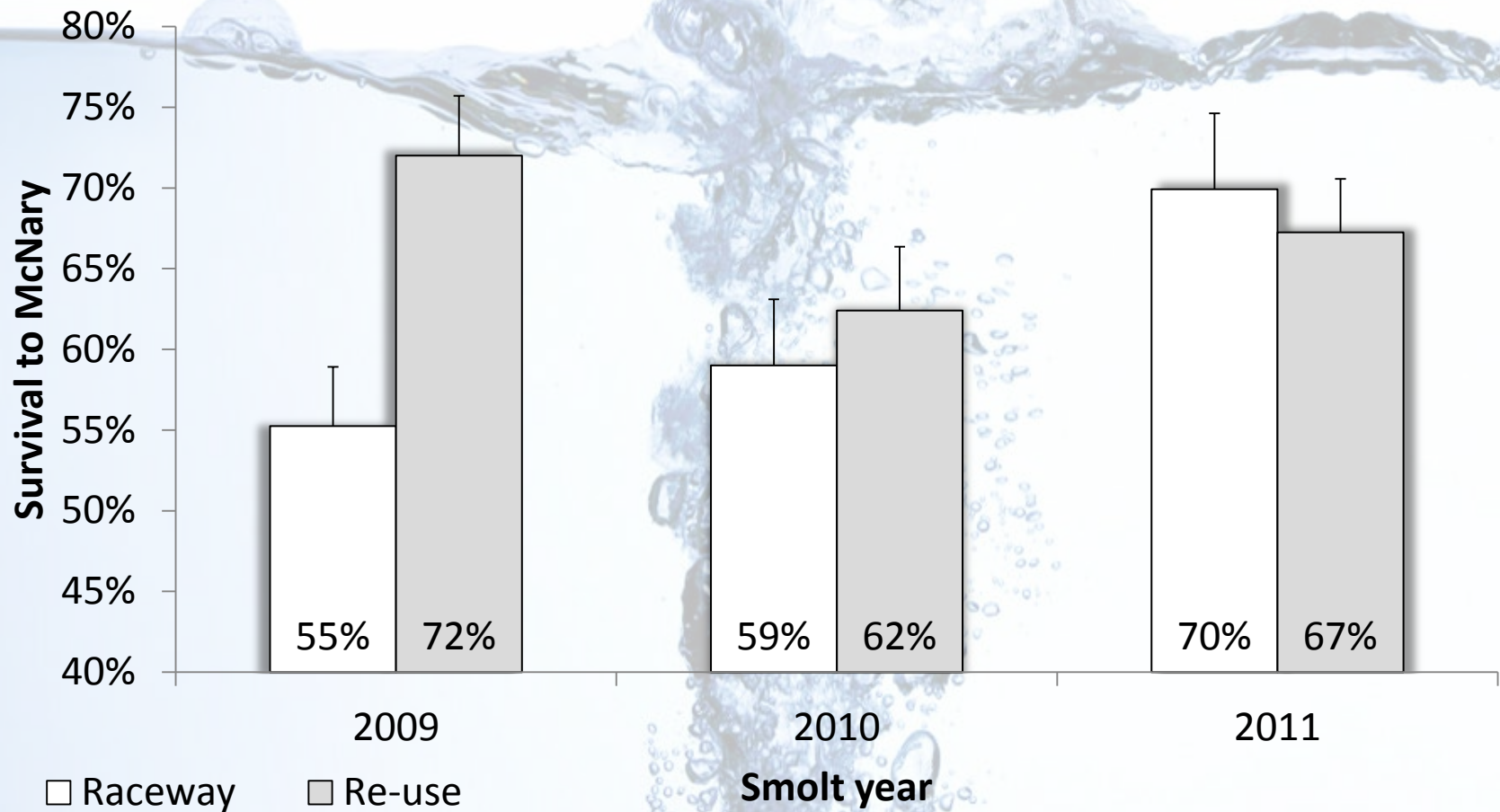


Performance is...

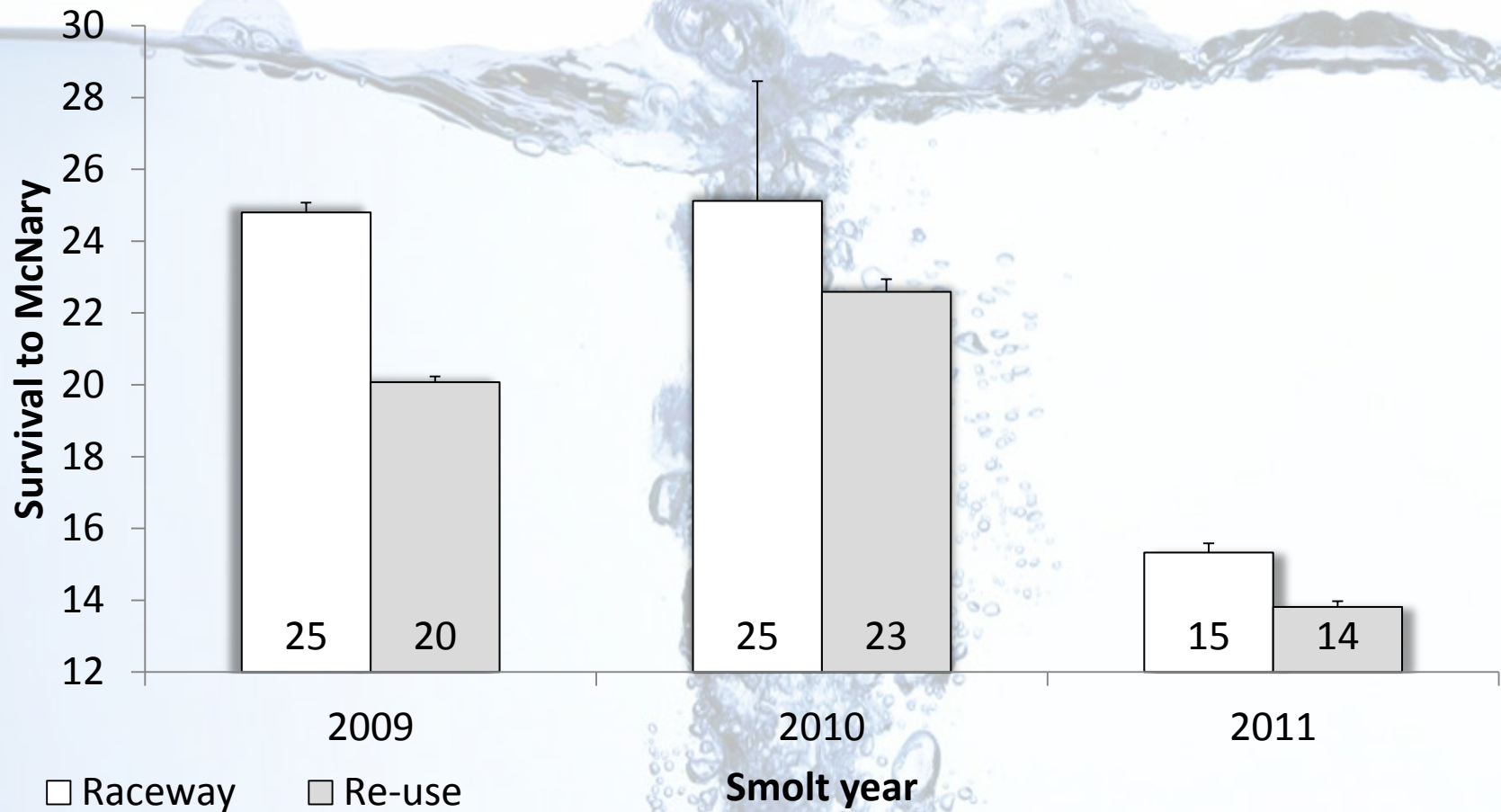
- Fish health
- Post-release survival
- Travel time downstream
- Smolt-to-adult returns
- Age structure



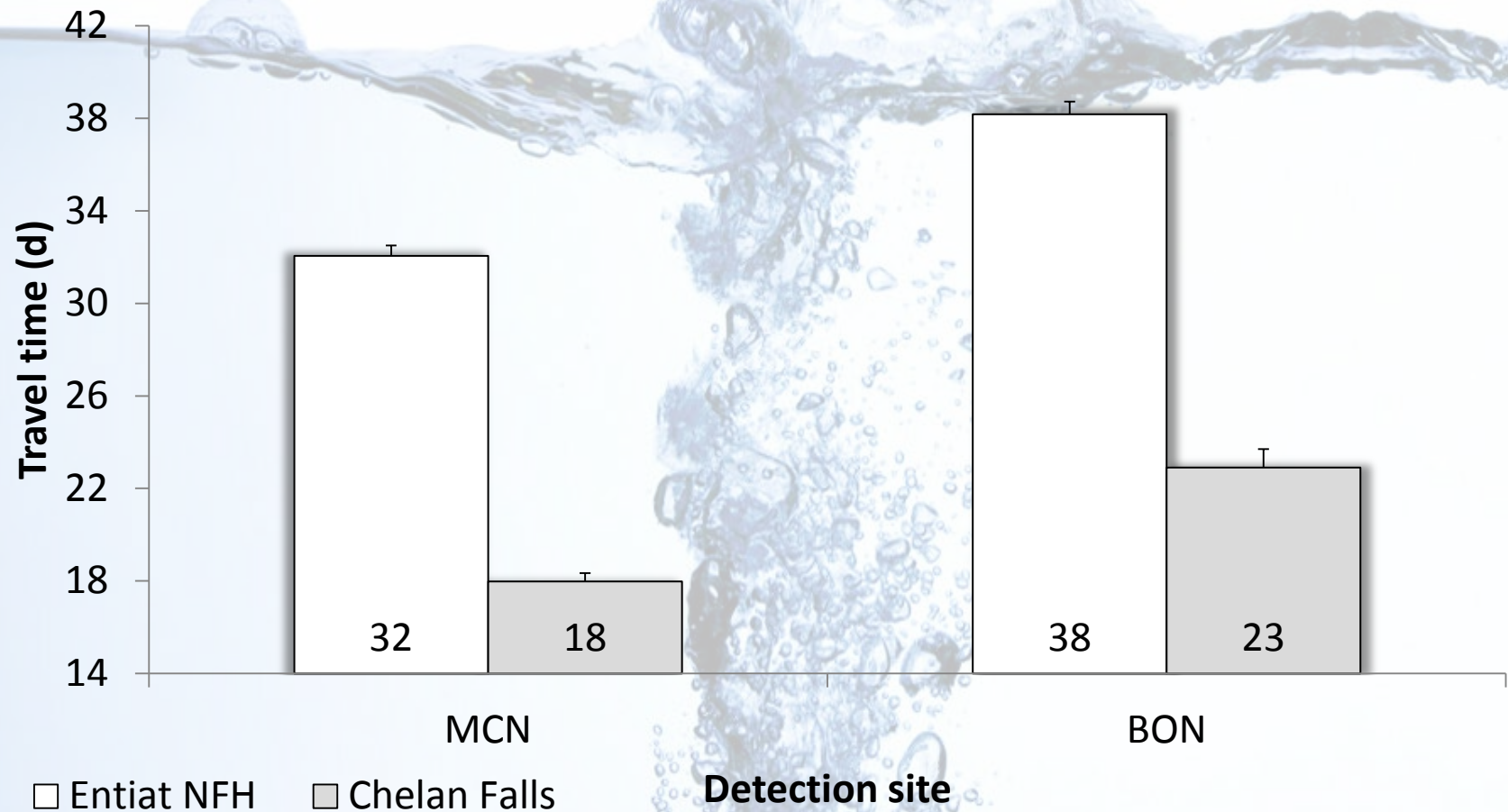
Survival to McNary Dam



Travel Time to McNary Dam

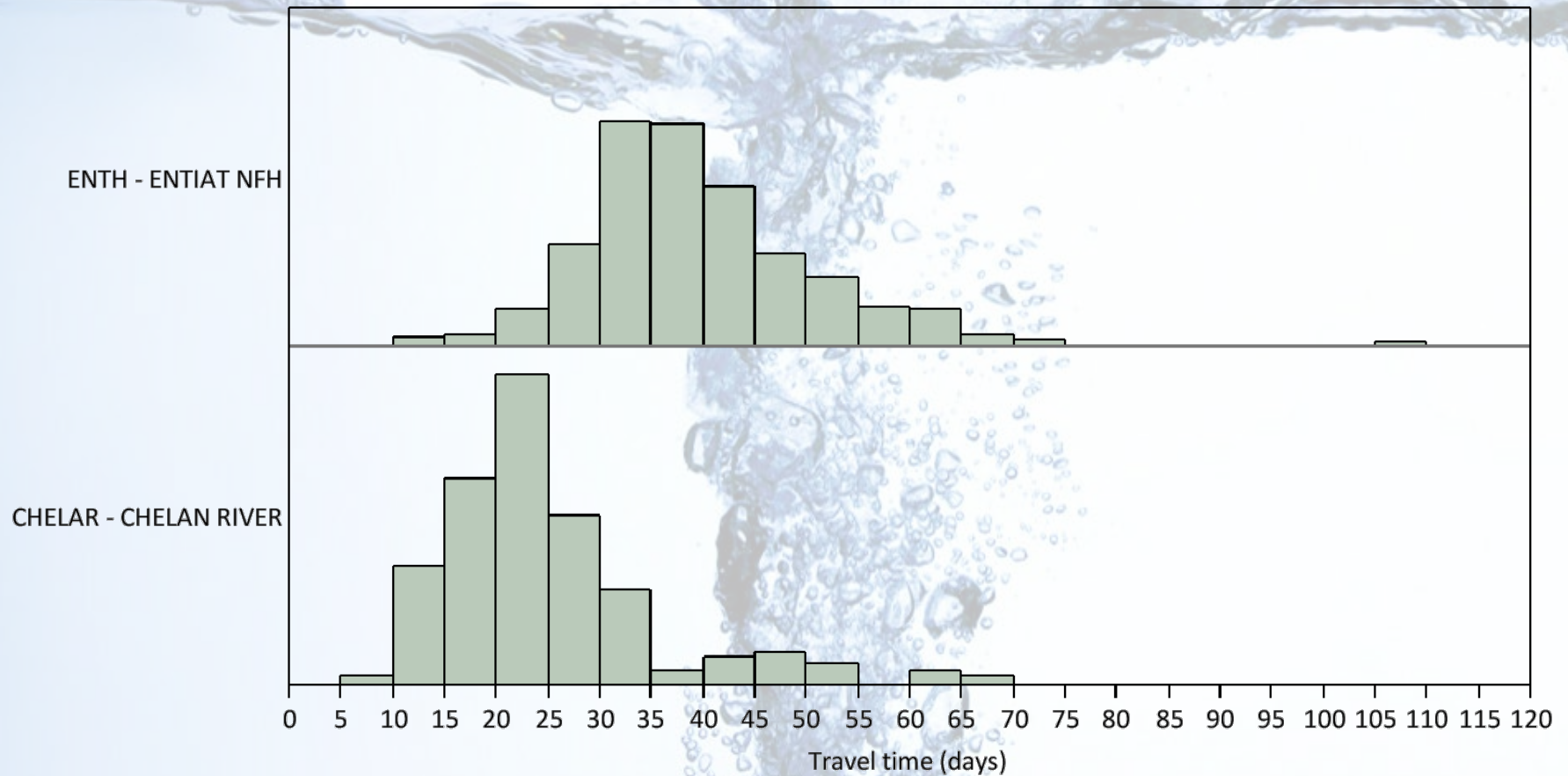


Chelan Falls vs. Entiat NFH, 2012

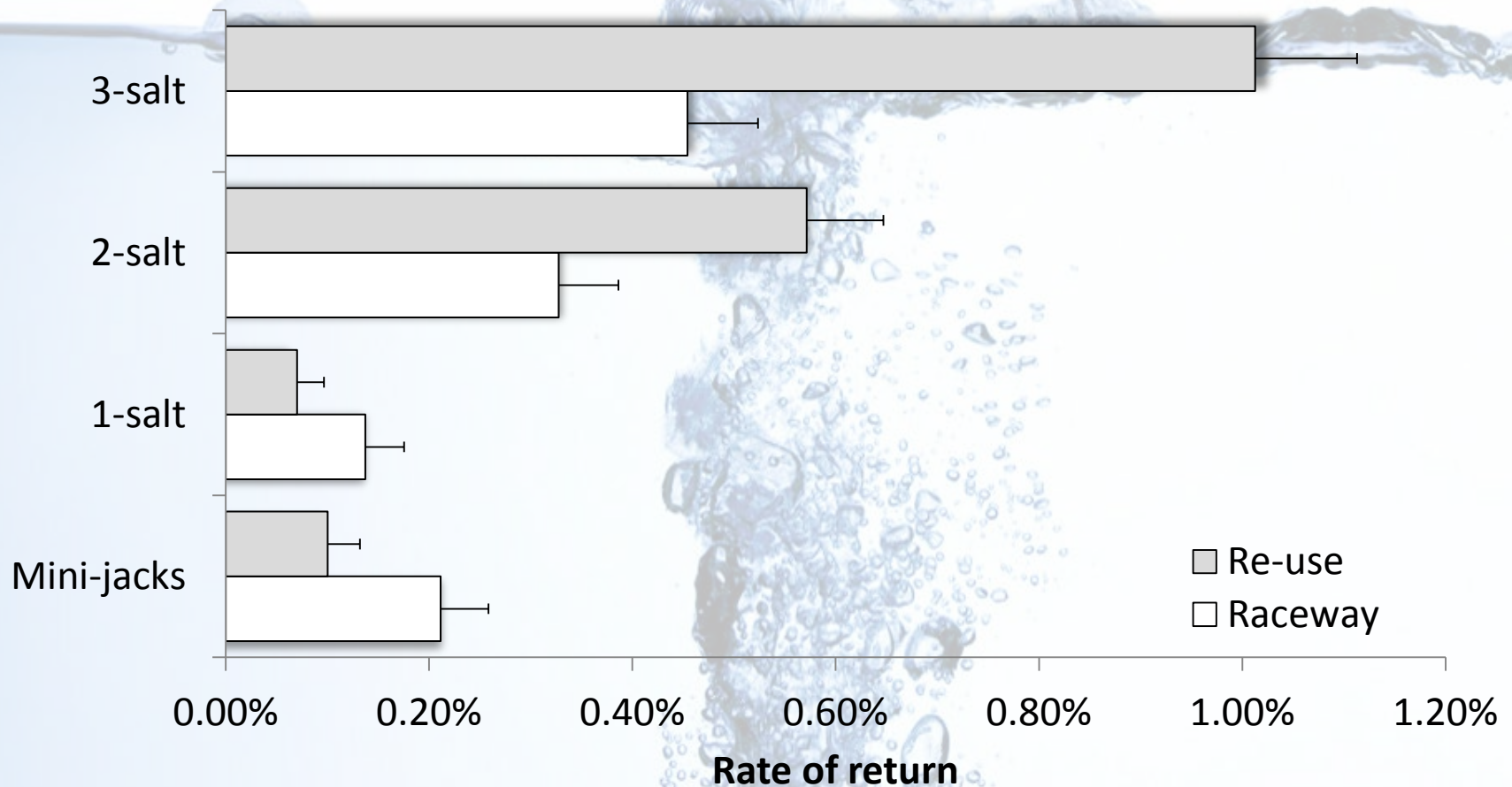


** Survival to McNary was not statistically different*

Chelan Falls vs. Entiat NFH, 2012

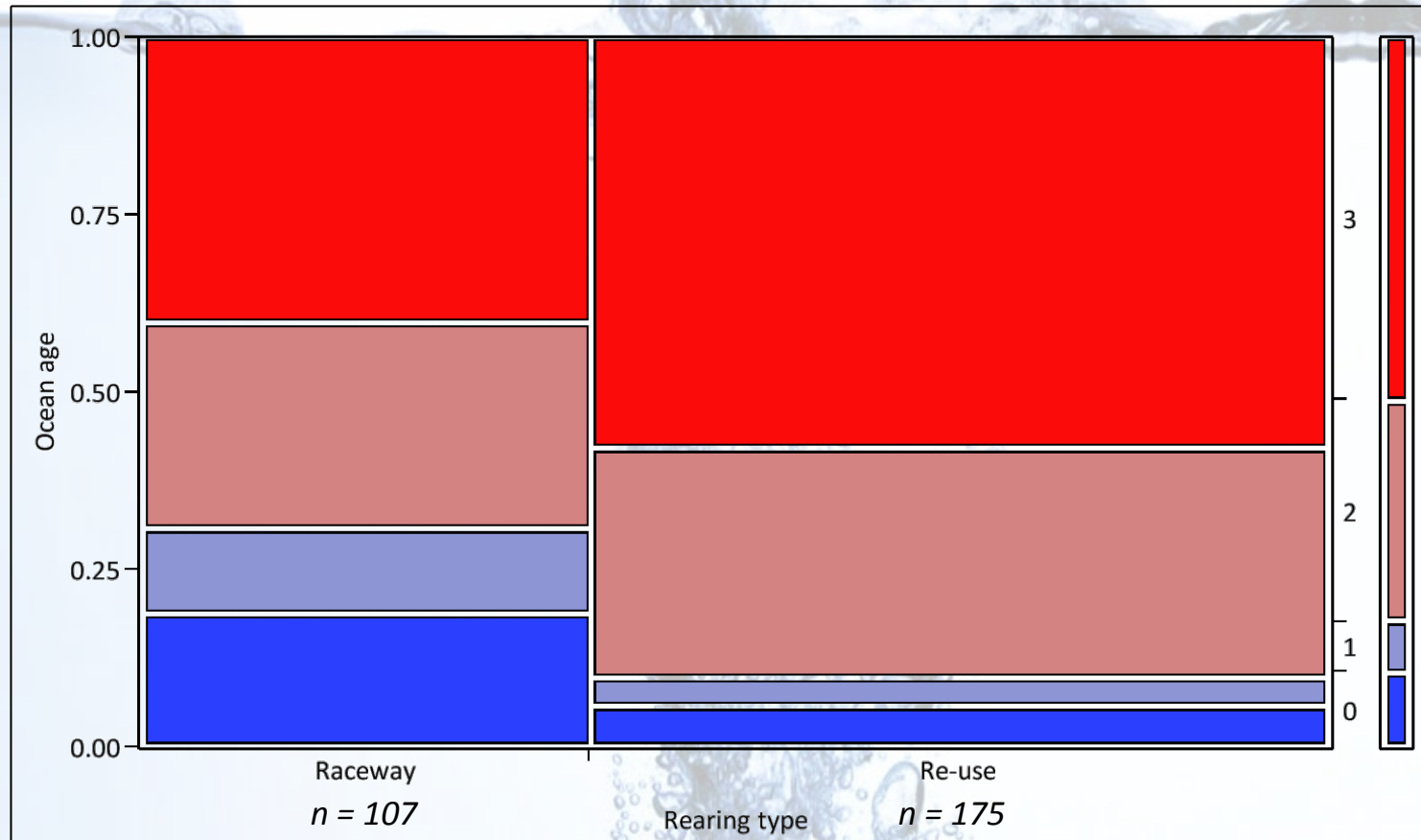


Adult returns



SAR = 0.78% vs. 1.58%

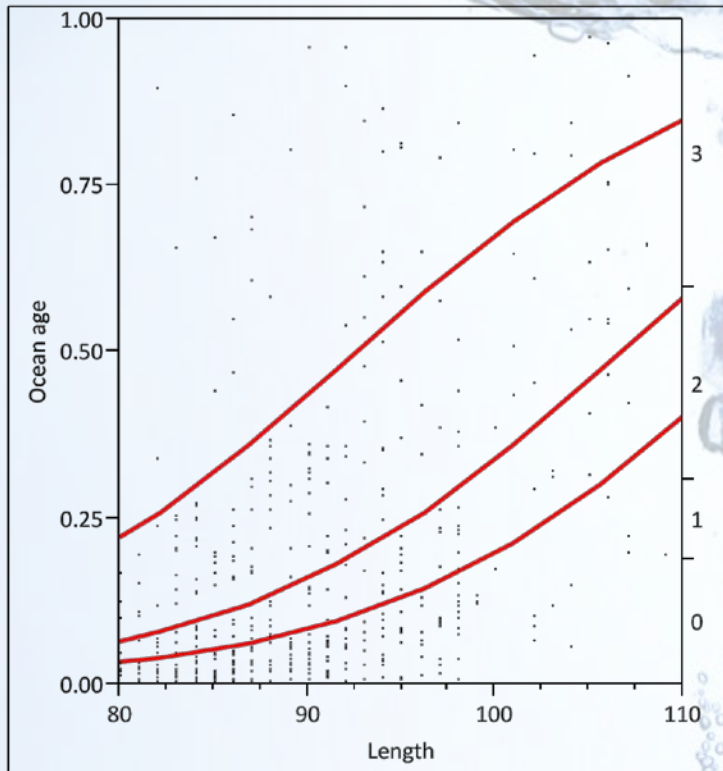
Age structure vs. rear type



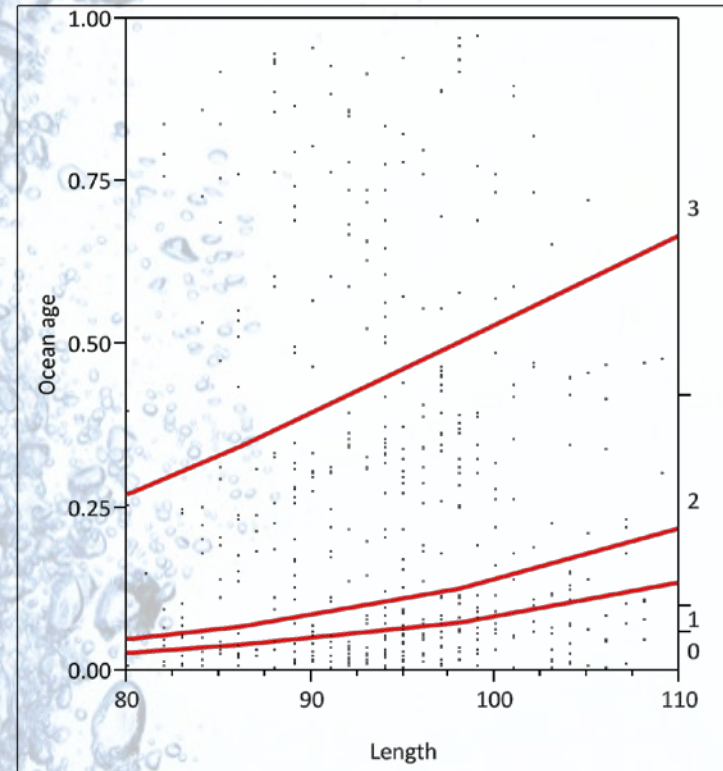
$p < 0.0001$

Age vs. Length, 2009 releases

Raceway ($p < 0.001$)



Re-use ($p < 0.011$)





Conclusions

- Water re-use and circular vessels
 - Healthy fish, less water consumption
- Smolt performance
 - Faster travel times, potential survival benefit
- Adult returns
 - Significantly greater survival and age structure



Implications

- Hatchery footprint
 - Water use, brood collection, smolt production
- Harvest augmentation
 - More adults, bigger fish
- Conservation
 - Greater reproductive success
 - Greater similarity to wild-origin fish