YKFP Spring Chinook Supplementation Assessment

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Indicators of Supplementation Success

- Total spawner abundance of the supplemented population should increase.
- Natural origin spawner abundance should increase.
- Productivity of supplemented population should not decrease.

Based on Monitoring and Evaluation of Supplementation Projects (ISRP & ISAB, 2005)

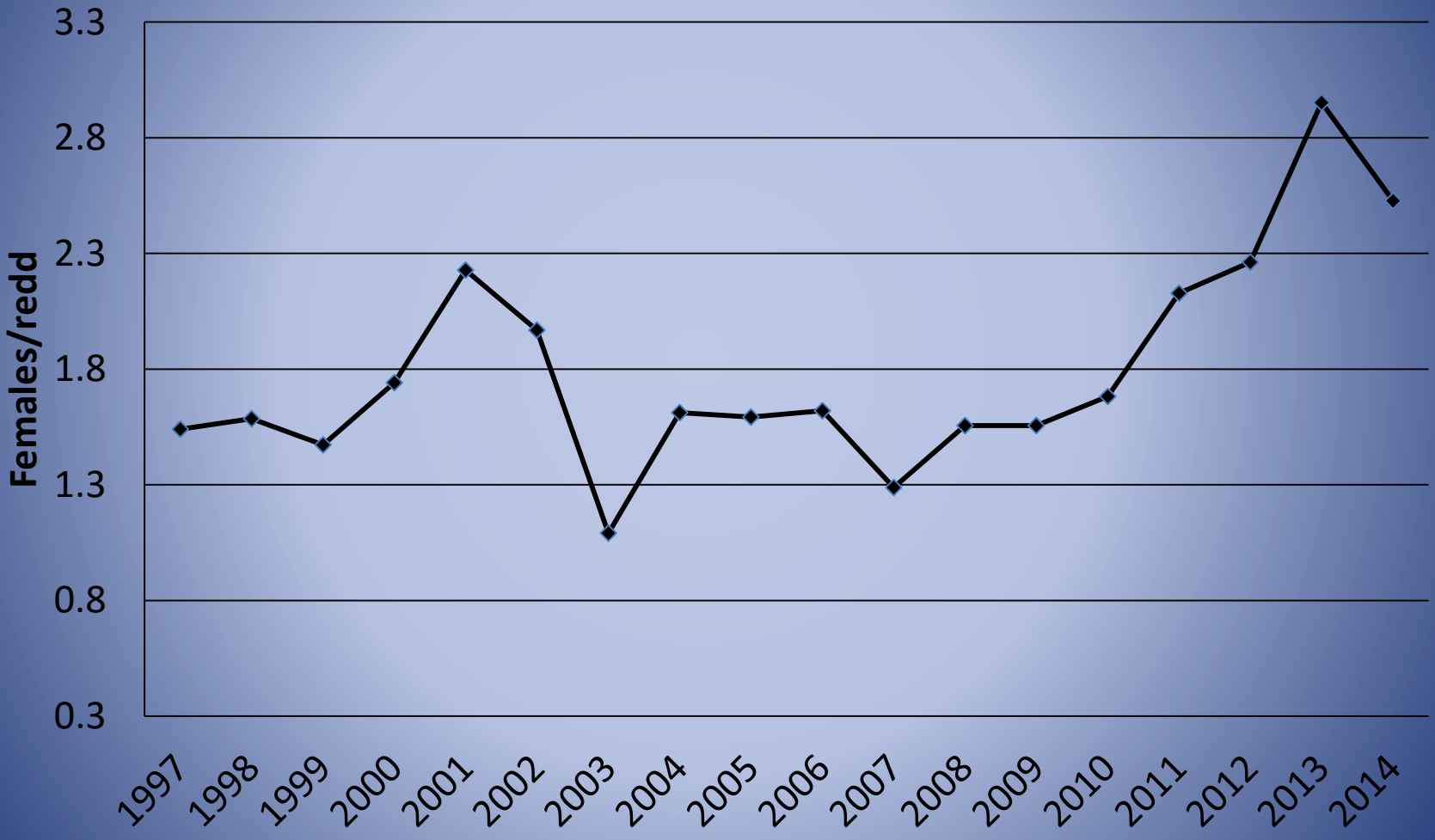
Protocol for Assessment

- Estimate spawner abundance of spring Chinook in the supplemented upper Yakima River.
- Identify suitable reference streams by comparing abundance and productivity before the onset of supplementation.
- Use a BACI to test the deltas (T-R) in the pre and post supplementation years.

Spawner estimate

- YN conducts weekly census of redds from all available spawning habitat in both upper Yakima and Naches
- Use carcass recoveries to estimate sex ratio of the spawning population (i.e., fish per redd)
- Expand total redds count by fish per redd to estimate spawning population.
- There is a desire to use Roza data.
- So why not just use Roza data? Roza provides a census of escapement to the spawning grounds but not an estimate of spawners.

Escapement vs. Redds



Roza Data

- Pre-1997 we only have visual counts of Roza escapement.
- 1997-2009 visual identification of males and females handled at the trap.
- Beginning in 2010 portable ultrasound provides accurate male/female ratio and total male/female escapement.

Methods 1986-1996

- *Used mean percent females (excluding jacks) from 1997-2006. Applied to adult count for female escapement.
- Divided total escapement at Roza by female escapement at Roza and multiplied by redd count.
- Used carcass samples to assign to cohort.
- *Have to assume similar survival rates between genders and age classes.

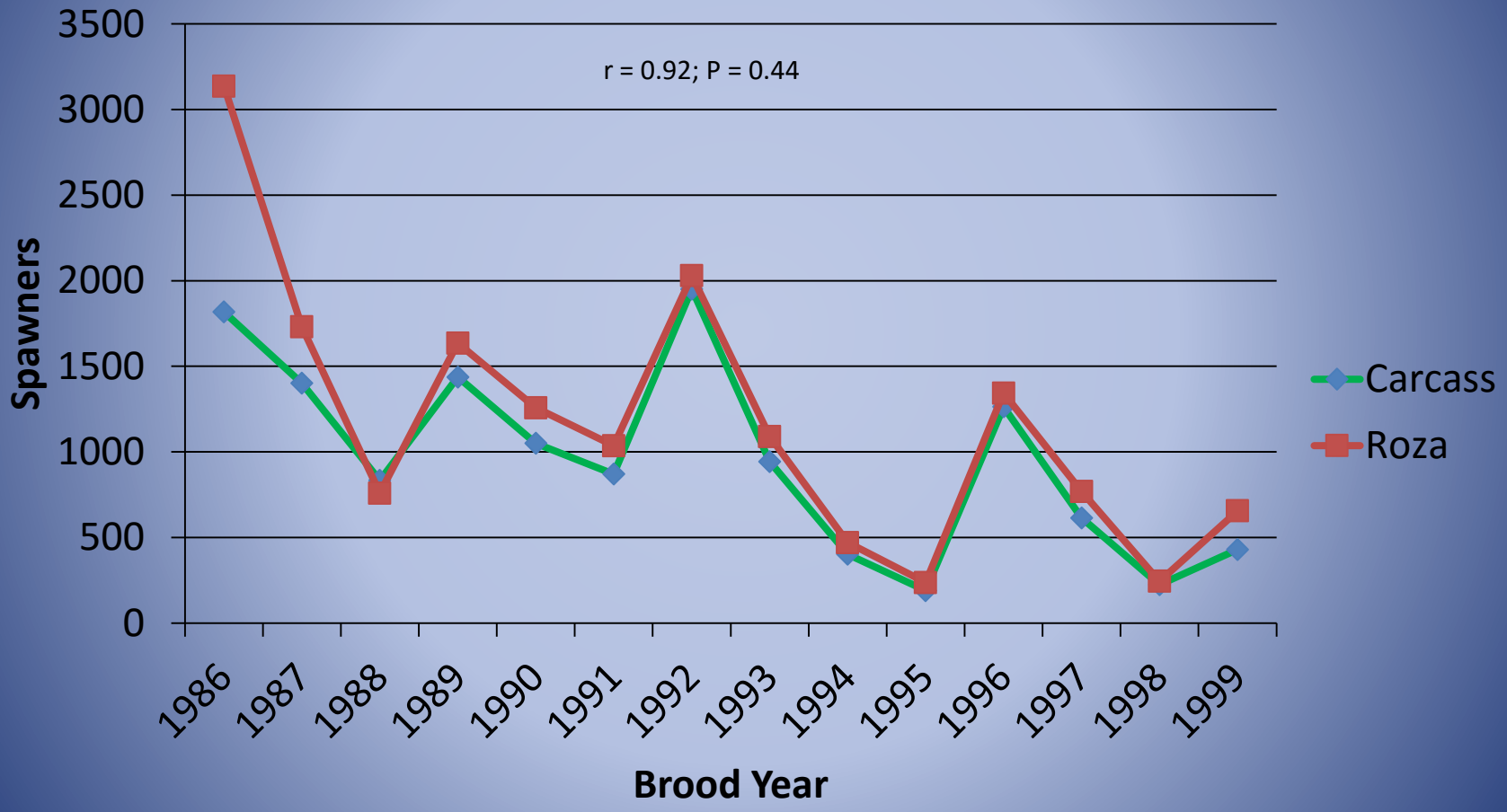
Methods 1997-2009

- Corrected the visual identification of adult males and females using data from broodstock at spawning and multiplied the proportion of females to the adult escapement to get total females.
- Divided total escapement at Roza by female escapement at Roza and multiplied by redd count.
- Used scale samples from Roza to assign to cohort.
- *Have to assume similar survival rates between genders and age classes.

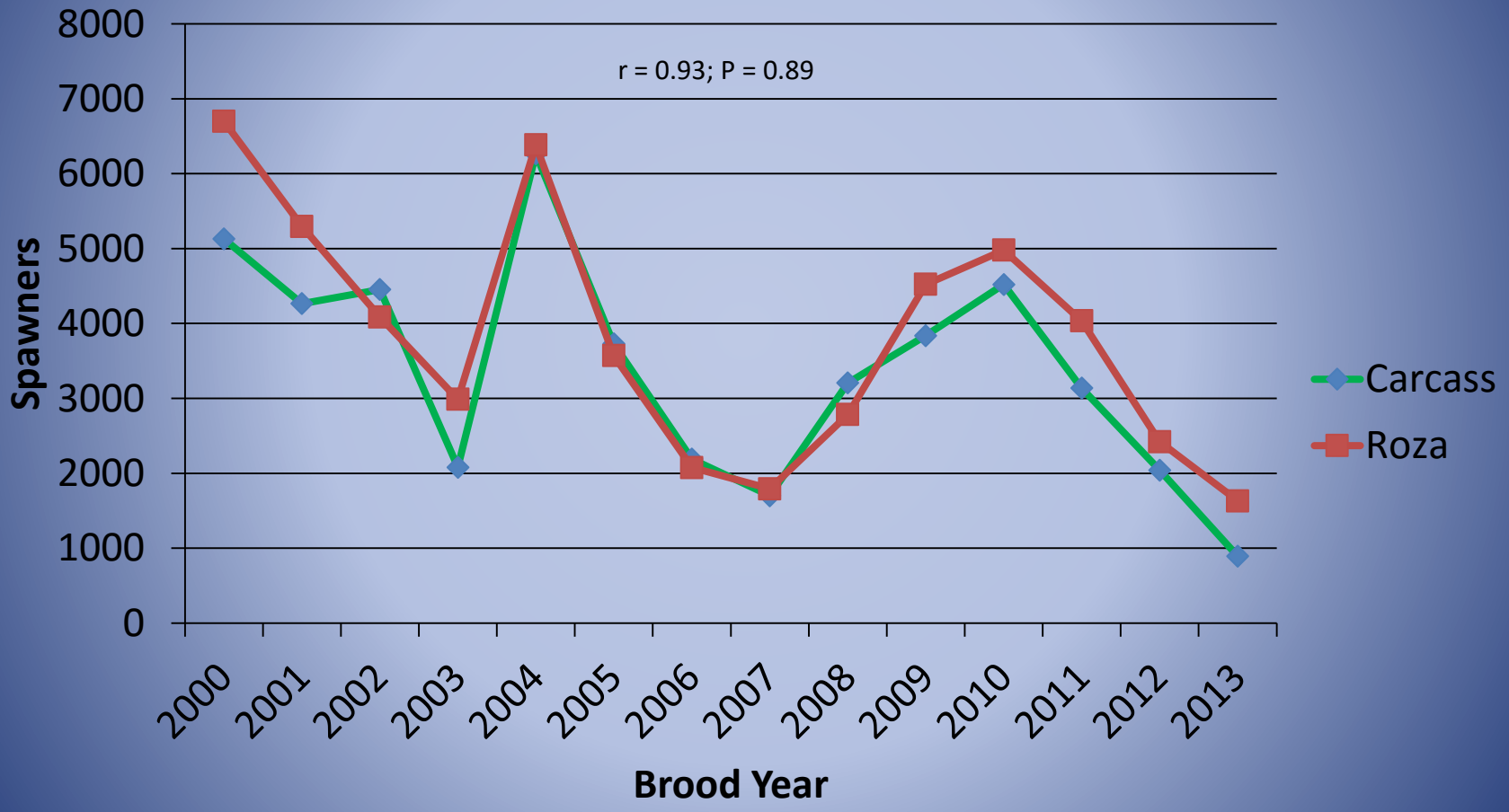
Methods 2010-Present

- Divided total escapement at Roza by female escapement at Roza and multiplied by redd count.
- Used scale samples from Roza to assign to cohort.
- *Have to assume similar survival rates between genders and age classes from Roza to spawning.

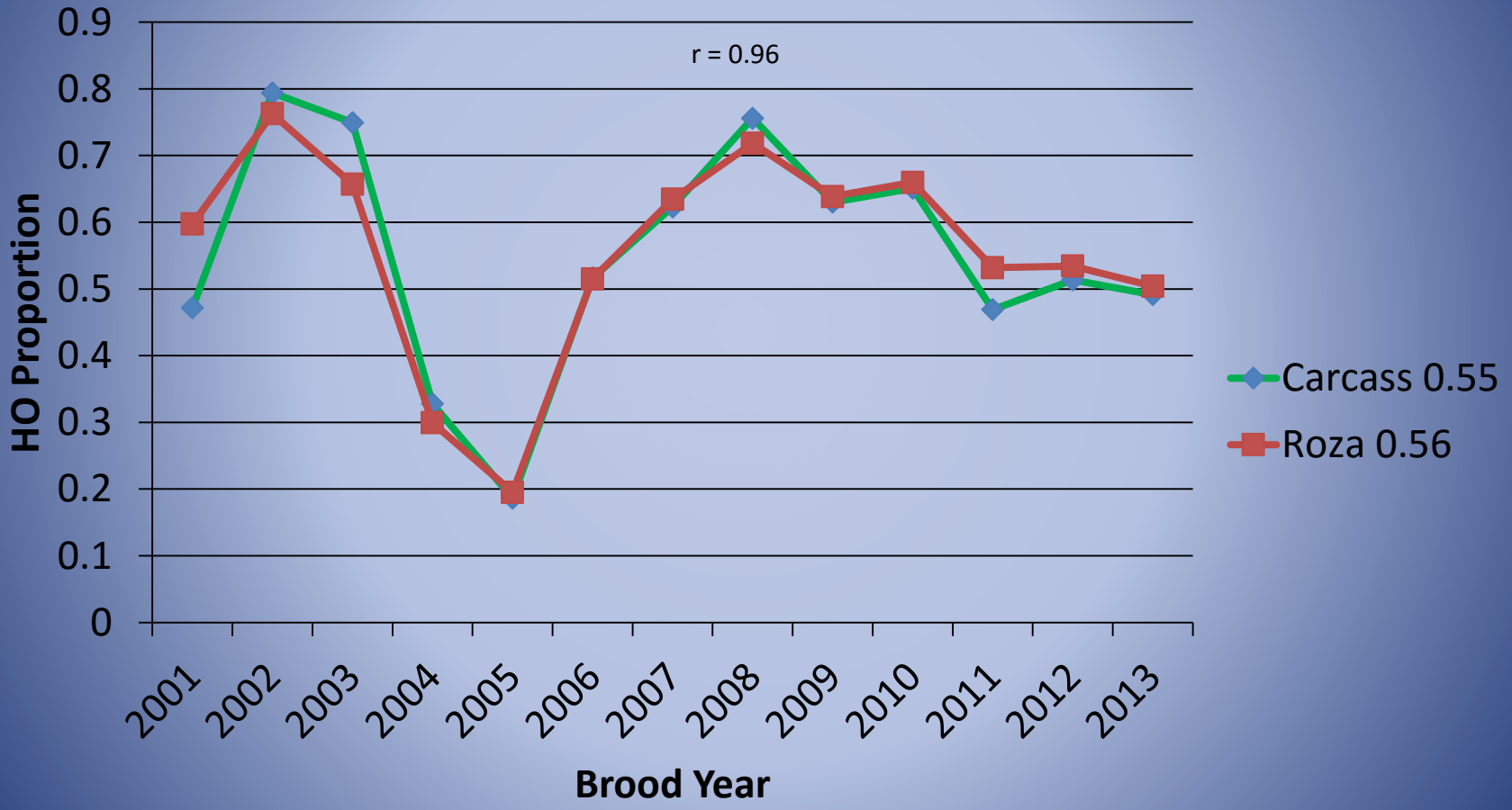
Pre-supplementation comparison



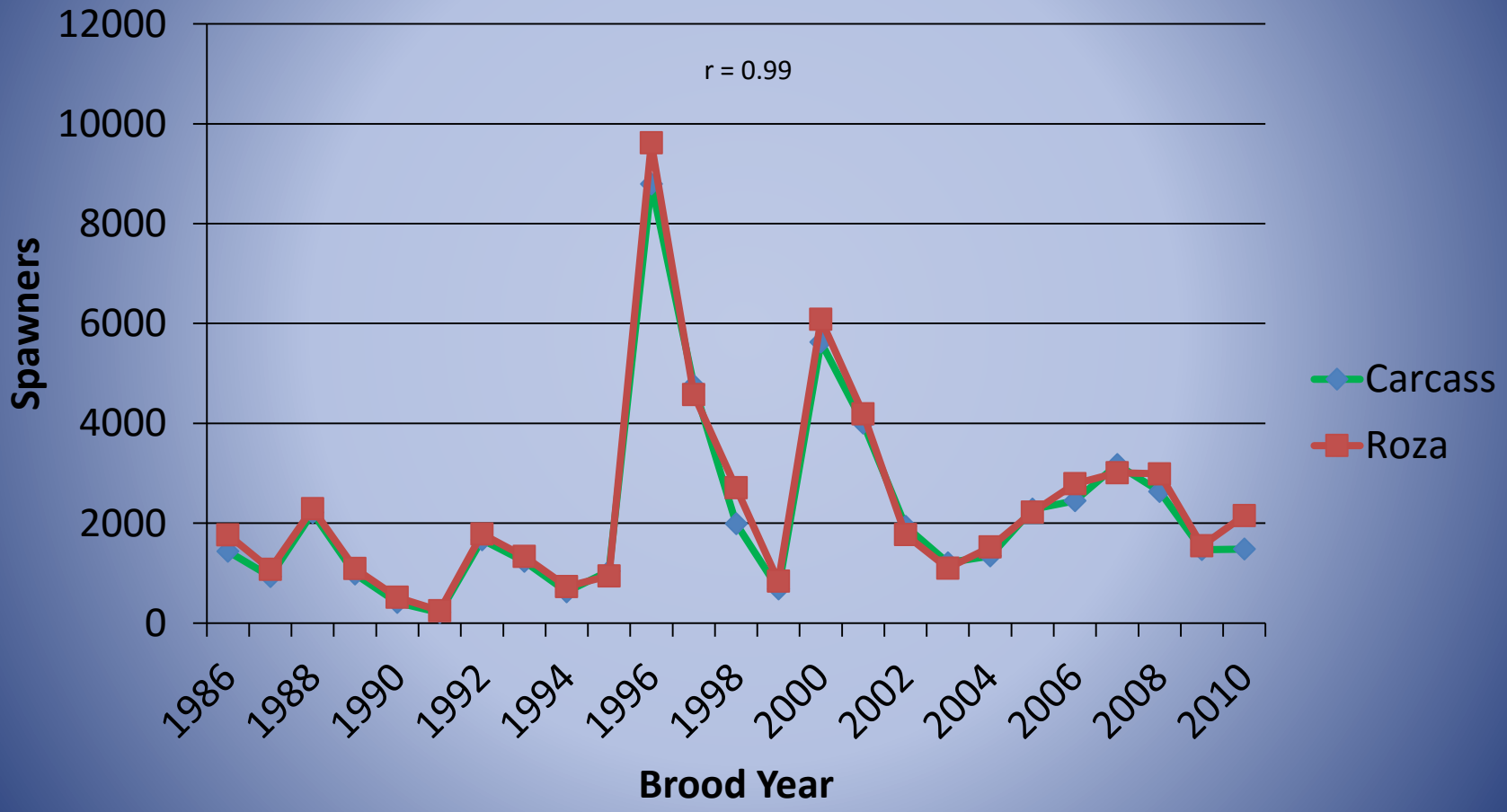
Post Supplementation comparison



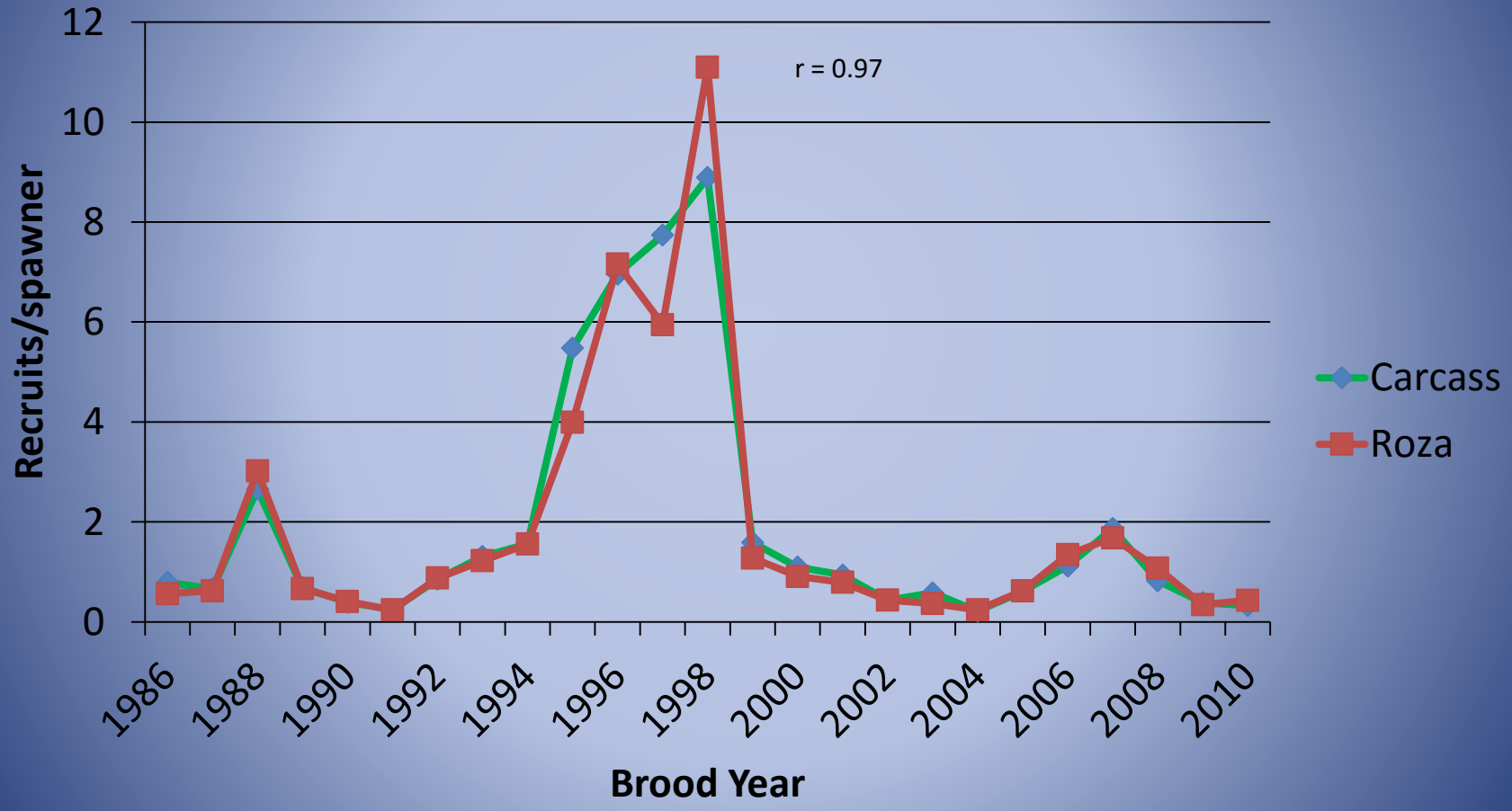
Proportion of HO Spawners



Natural Origin Recruits



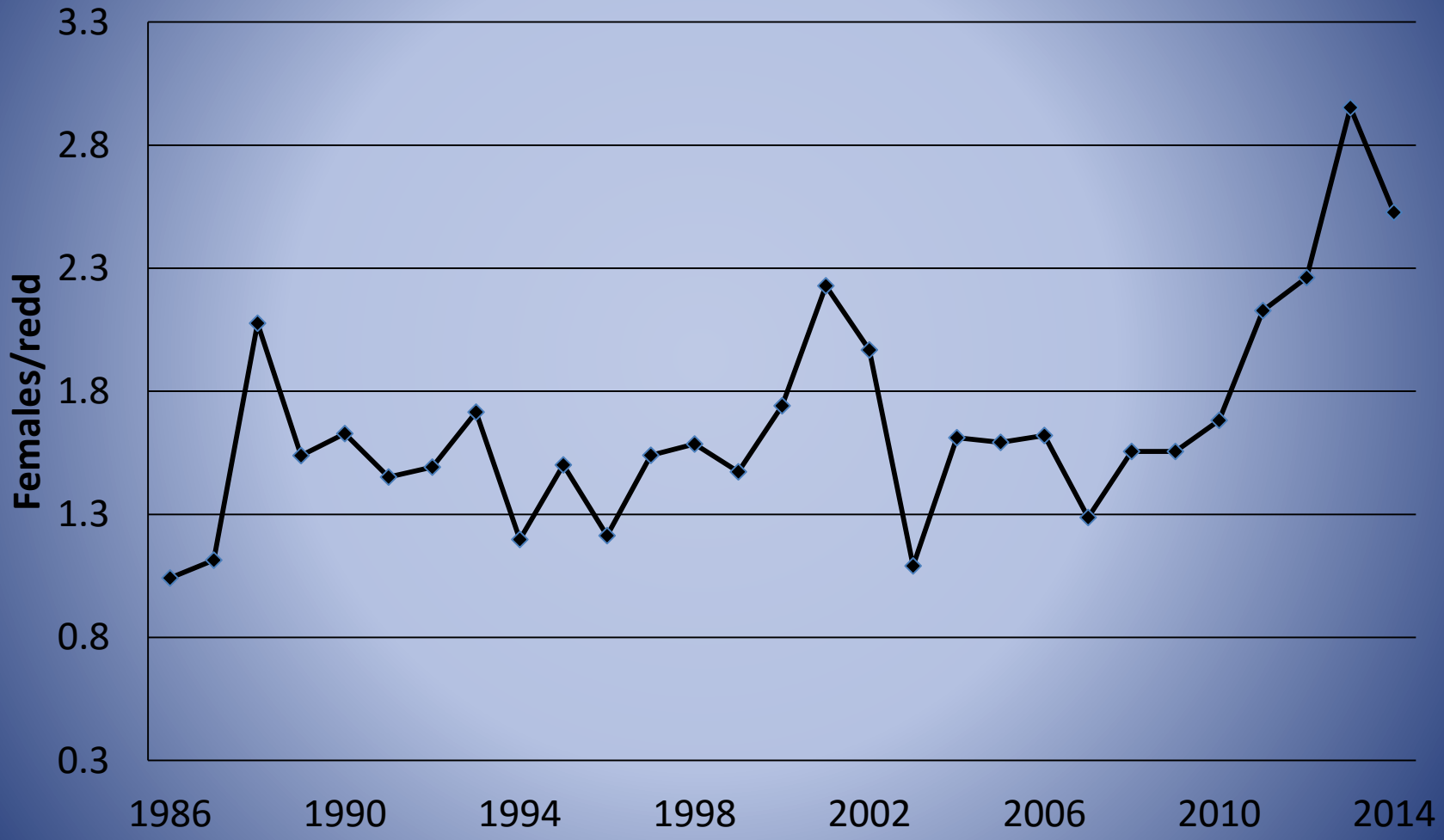
Productivity



Conclusion

- Roza looks like it has great potential as a simple method to estimate spawner abundance, especially with the adoption of ultrasound.
- Need to think about other comparisons to validate estimates and investigate recent trend in females/redd.
- Carcasses are still necessary. Good for spawner distribution, monitoring any changes in HO and NO relative mortality, consistent with how other populations are currently monitored.

Acknowledgements

- All carcass and redd surveys in the Yakima and Naches are performed by YN Fisheries personnel.
- All data at Roza are collected by Mark Johnston and his crew with the YN.
- Bill Bosch maintains database and provided data.
- Andy Dittman with NOAA Fisheries provided additional carcass data for upper Yakima.

Escapement vs. Redds