Ecological Evaluation of Coho Salmon Reintroduction in a Central Washington Watershed

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Background

- Historically- Yakima significant coho producer (50-110k)
- 1900's- Coho salmon extirpated in several Yakima tributaries
- 1980's- Gone in the entire Basin
- YN initiated re-introductions 1985 and established formal project in 1996

To :"determine the feasibility of re-establishing a naturally spawning coho population and a significant fall fishery for coho in the Yakima River basin, while keeping adverse ecological impacts within specified limits."

- YN and WDFW initiate interactions study 2007 in Taneum Creek, Washington

Taneum Creek

Taneum Creek

Bruton Diversion

Taneum Ditch Fixed late 80's

Artificial Obstructions:

1. Diversion dam (Taneum Ditch). Diversion #2. Concrete with splash boards, 3'. No protective devices. No fish ladder. Complete barrier to upstream and trap downstream migrants at low water--sufficient to destroy run. See photograph.

Natural Obstructions: None

tuation in Water Level:

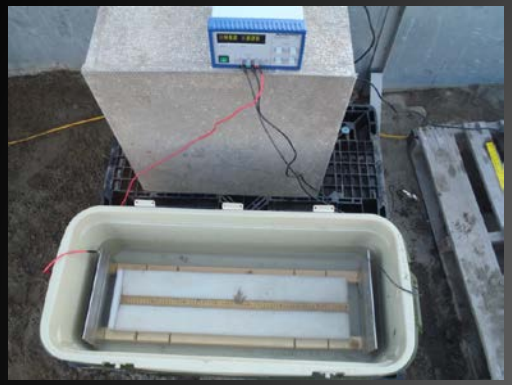
e of Variation: seasonal run-off

- First settled in 1863
- "Reported that up to about 1910 a large run of silvers entered this stream but upon the completion of the Taneum Ditch, they soon became extinct."
- Coho reintroduction 2007
- Bruton Dam removed 2009

Interactions Study

- Taneum good candidate for coho re-introduction
- Also has robust and long-term fish monitoring dataset - full complement of sites established 1997-YKFP (Cutthroat trout status) + added 3 new sites
- Swauk - spatial control stream
- PIT tag interrogation system added near the mouth
- Basic Plan - Jumpstart natural production, monitor response in *O. mykiss* (abundance, size, biomass, growth) over 5 years
- BACI design

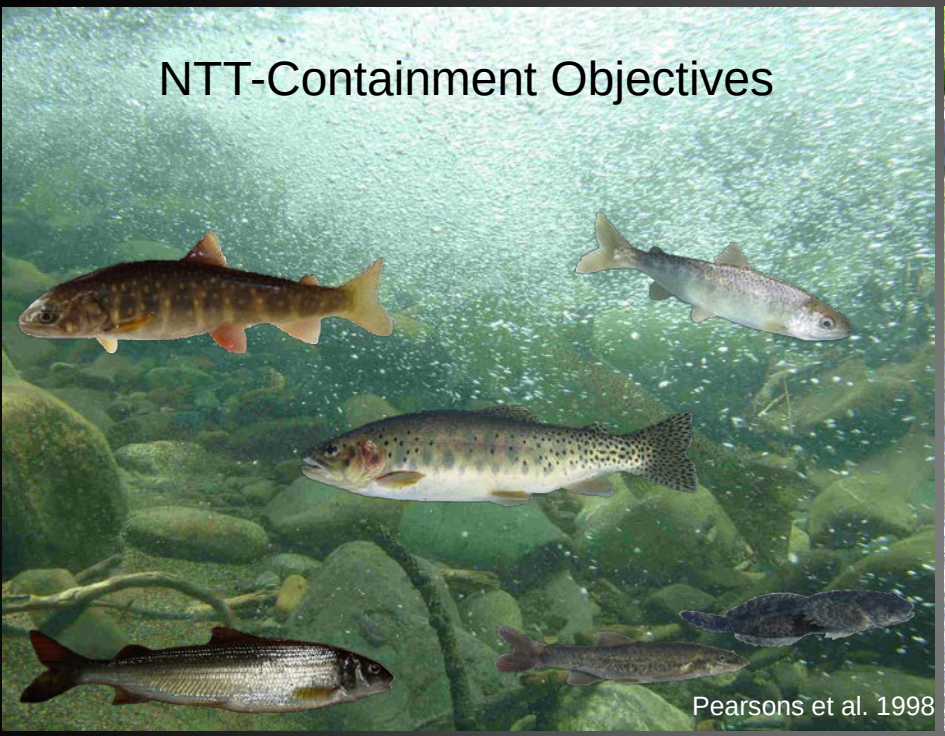
Coho Adult Out-planting



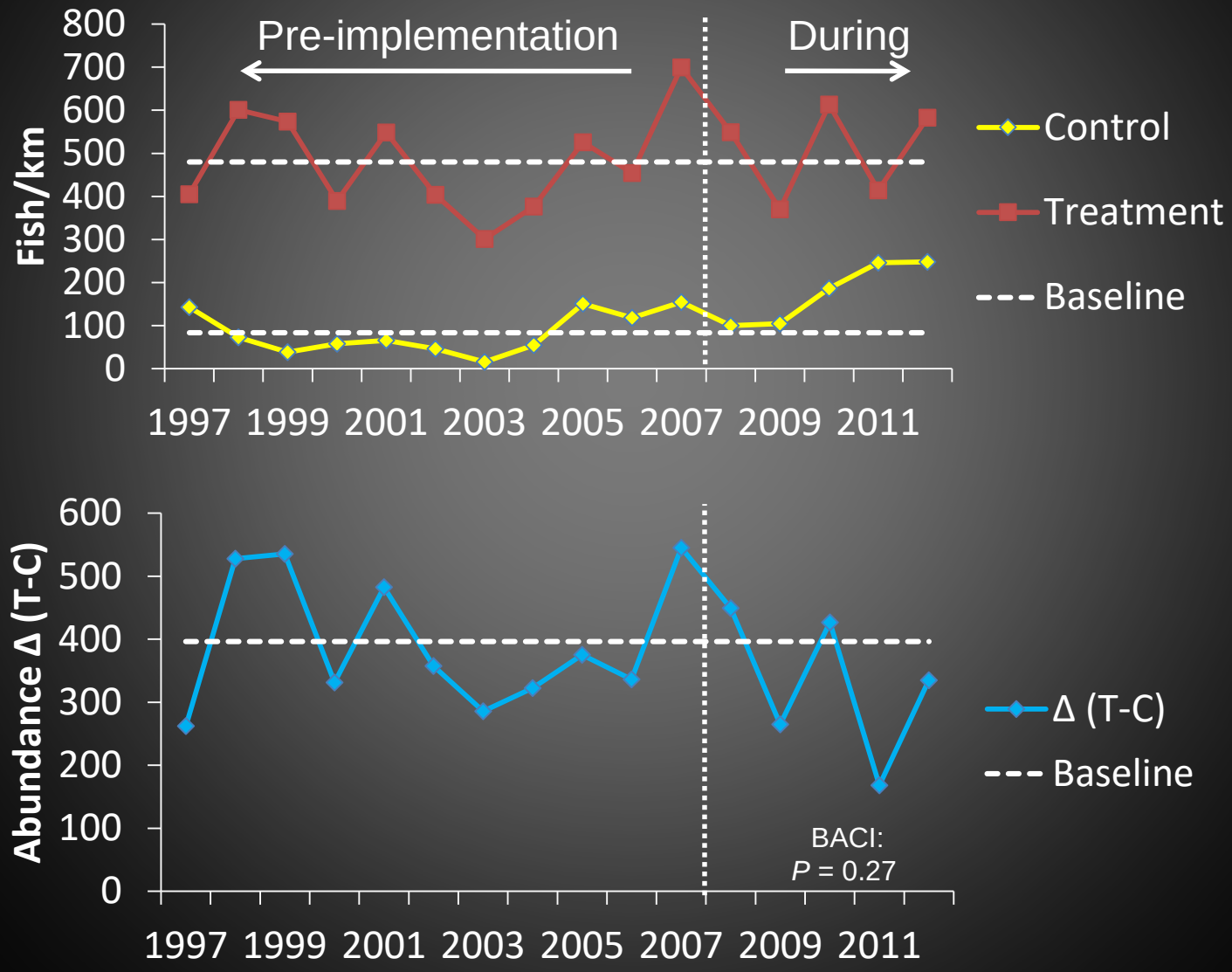
Natural Production Monitoring

Brood Year	Redd
2007	100
2008	87*
2009	135
2010	135
2011	108

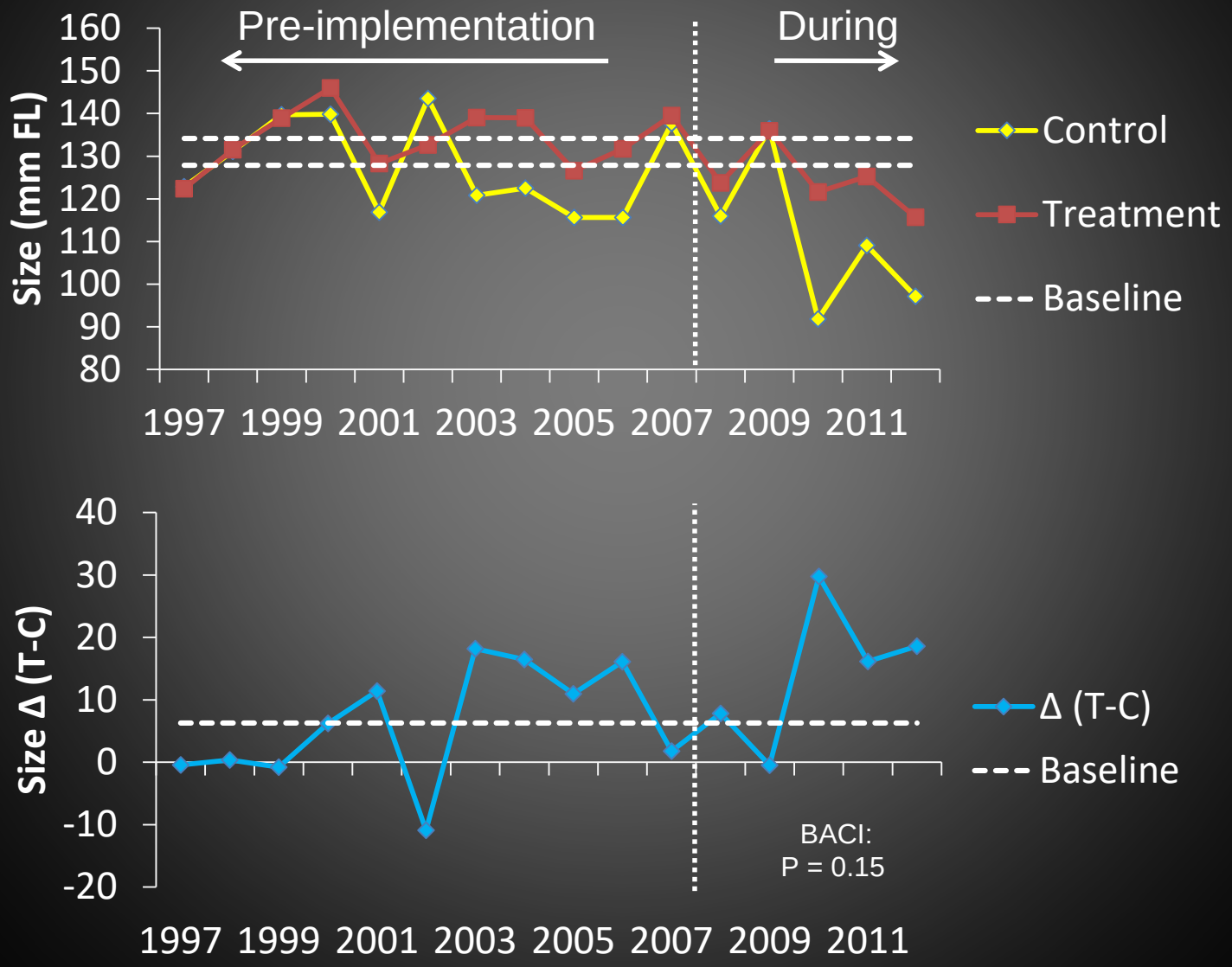
Risk Containment Monitoring



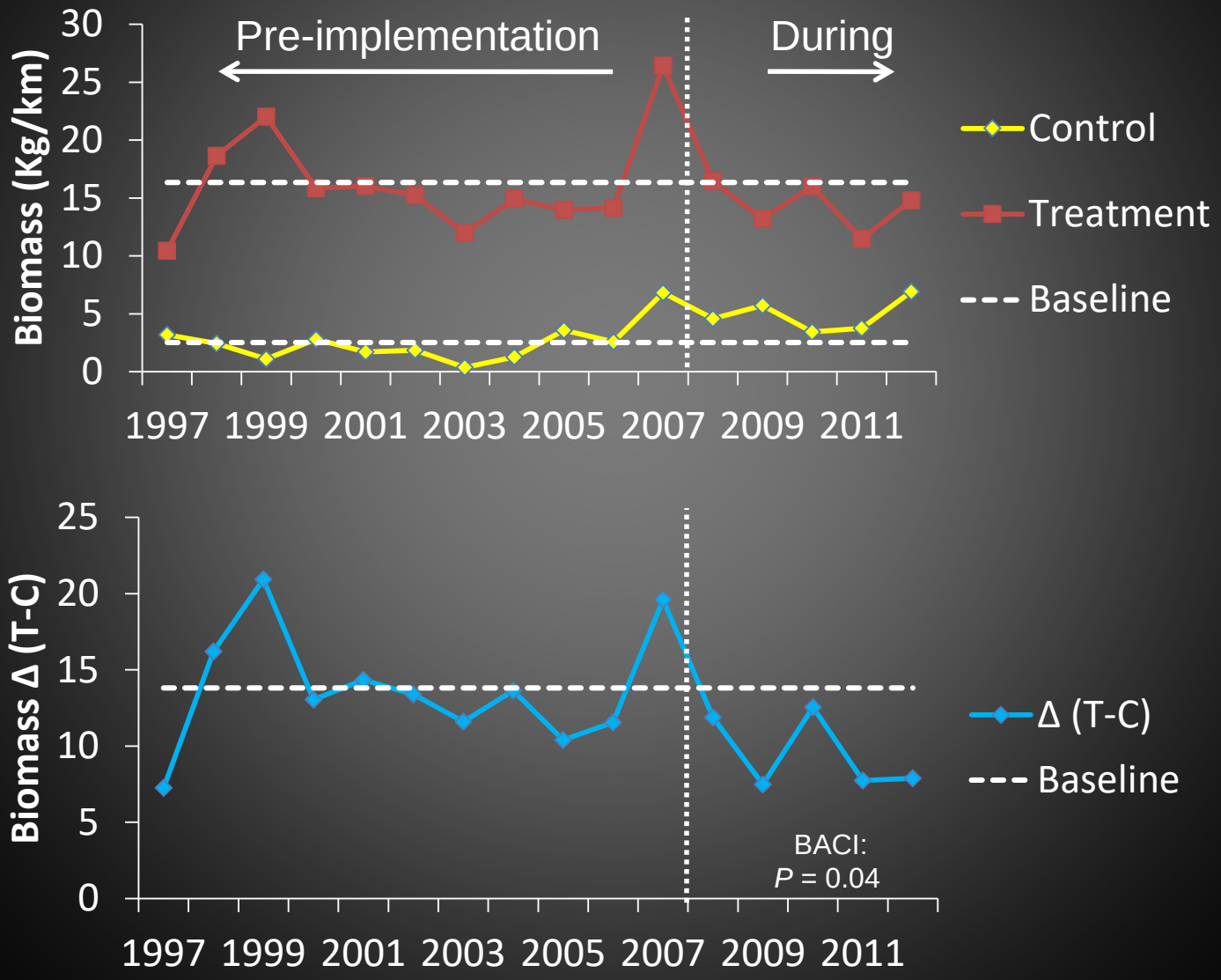
Rainbow Trout Abundance



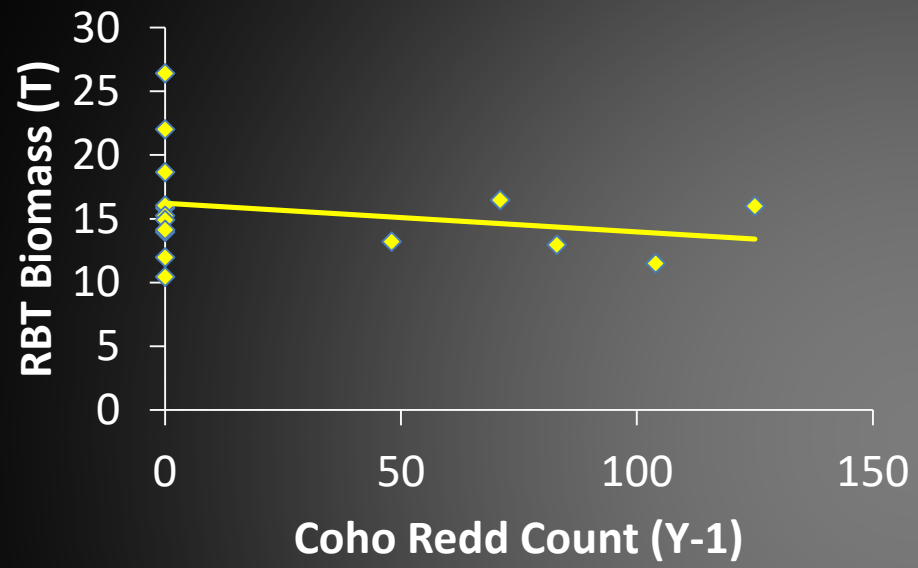
Rainbow Trout Size

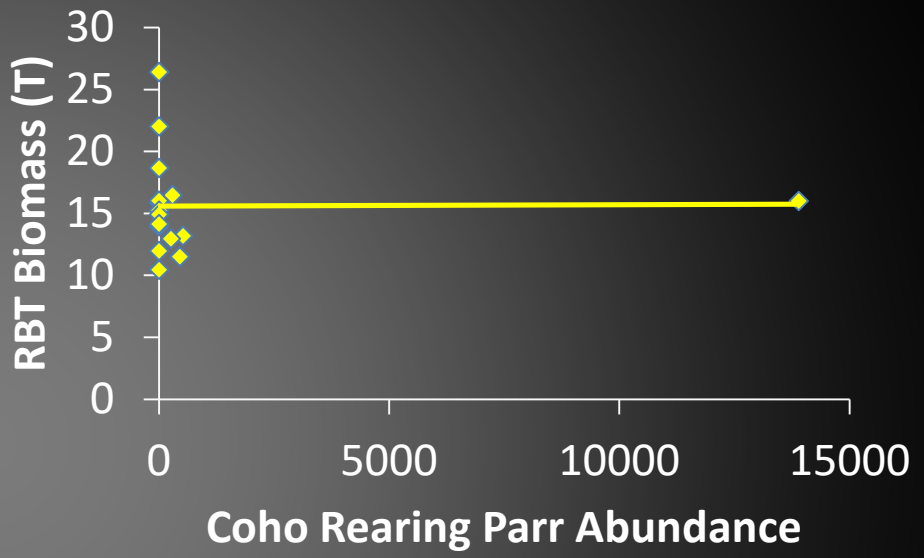


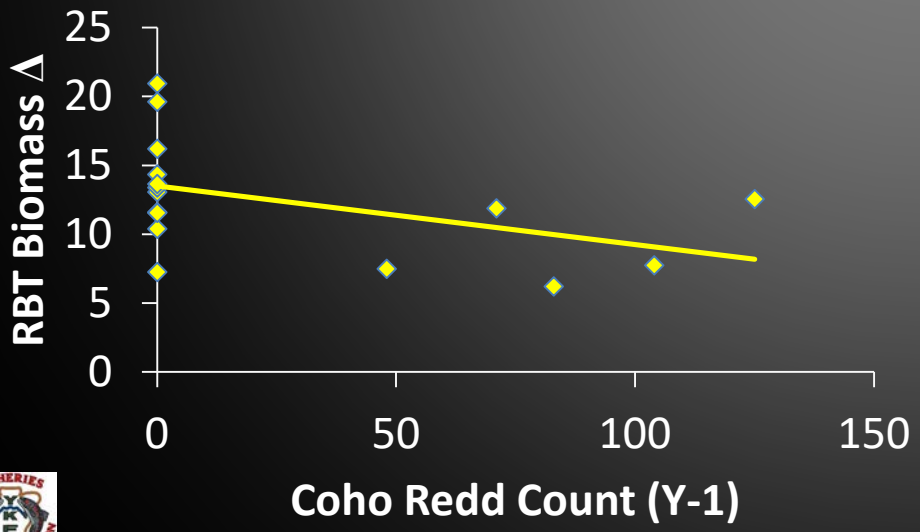
Rainbow Trout Biomass

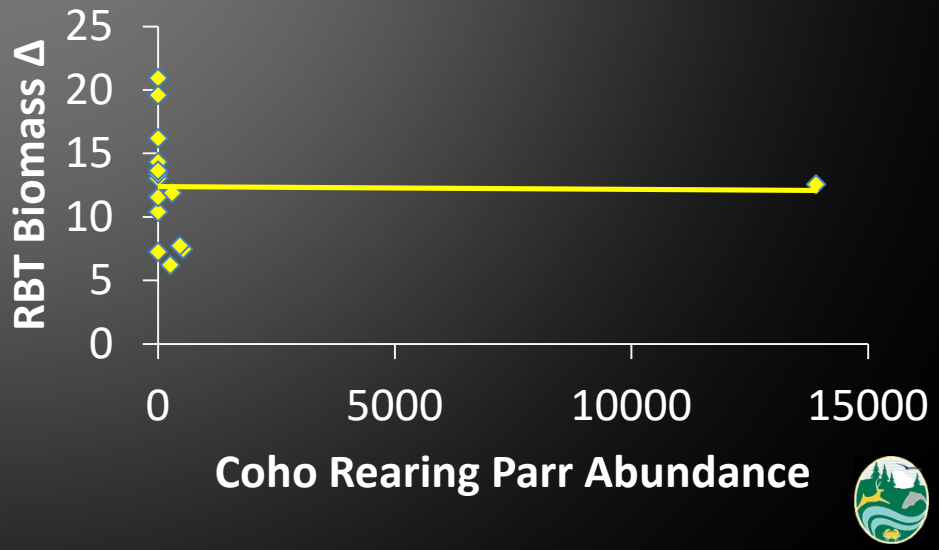


Causation-Biological



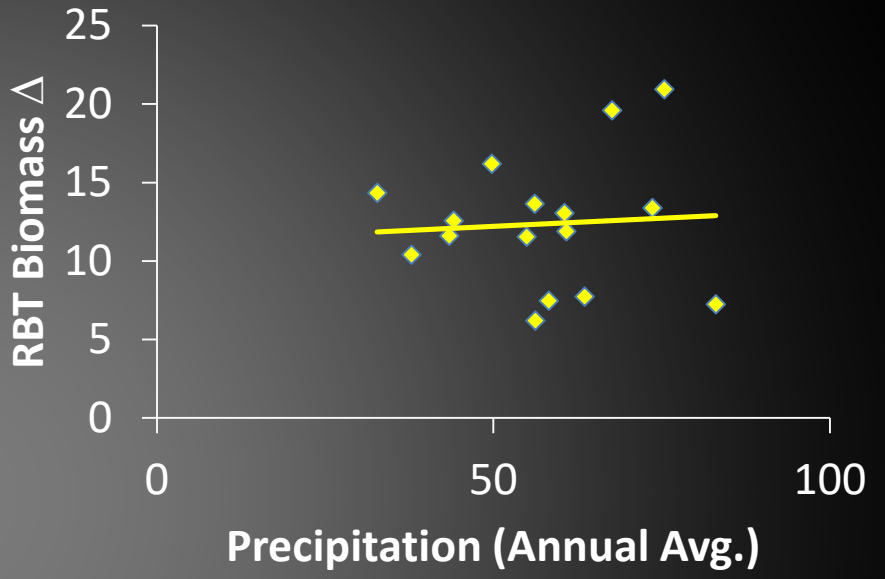


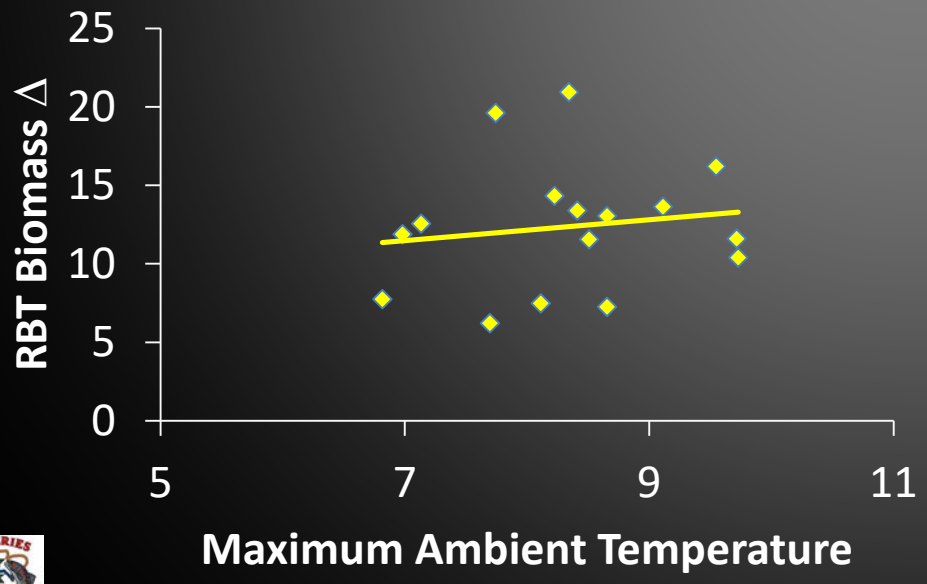


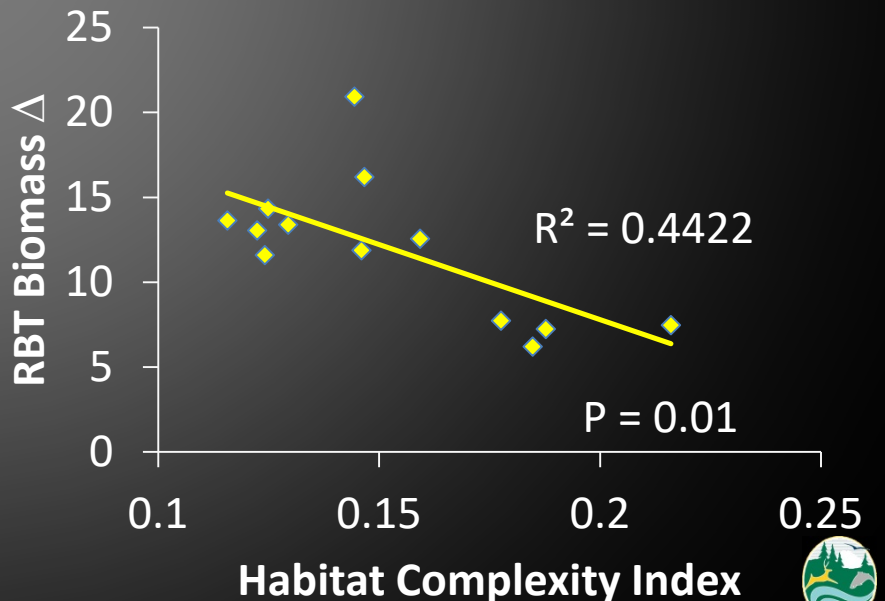


Causation-Environmental

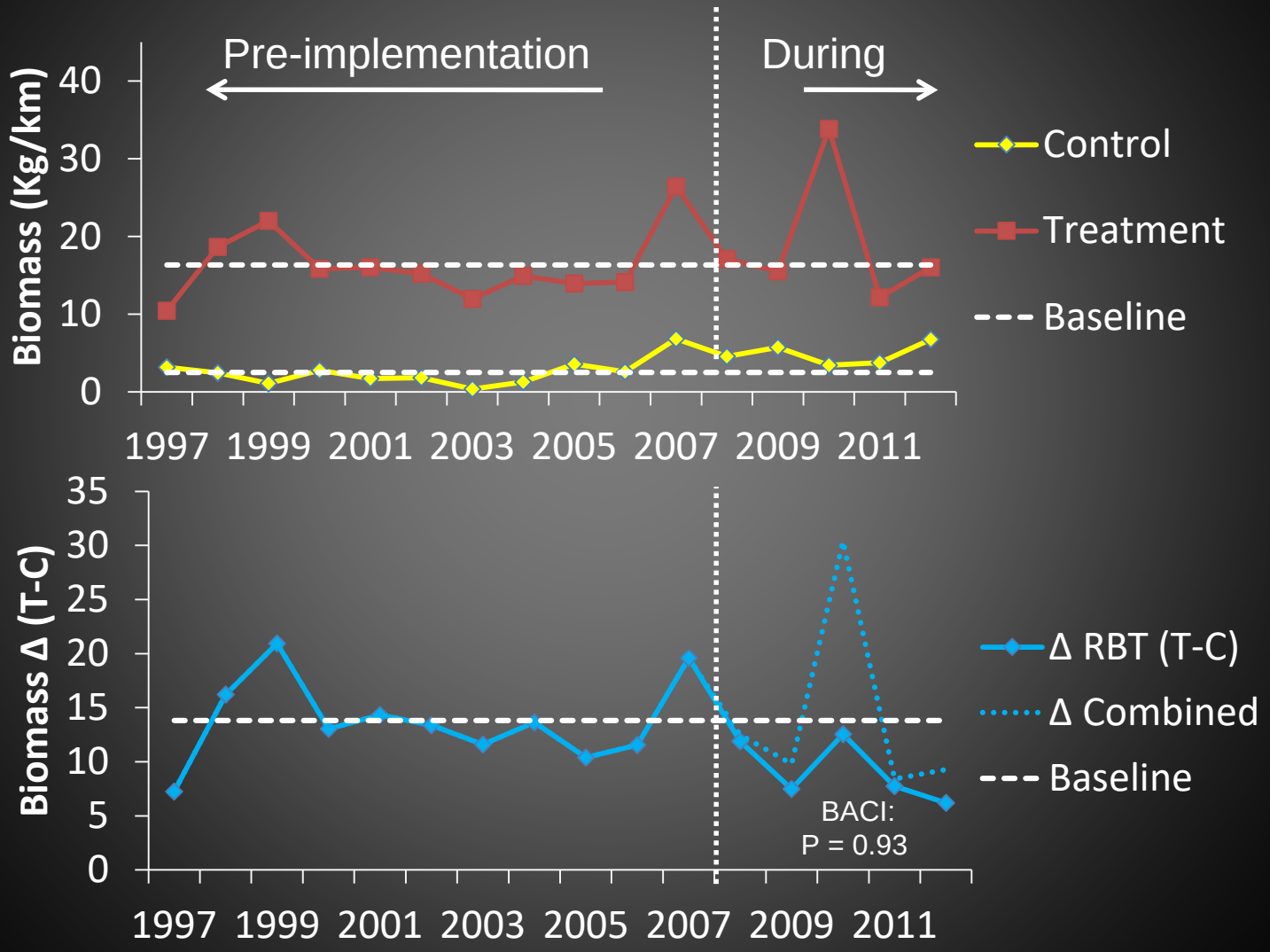
Parameter	R2	P value
Stream Discharge	0.02	0.62
Mean Wetted Width	0.14	0.15
Snow Water Equiv.	0.005	0.79
Mean Monthly Temp.	0.005	0.80

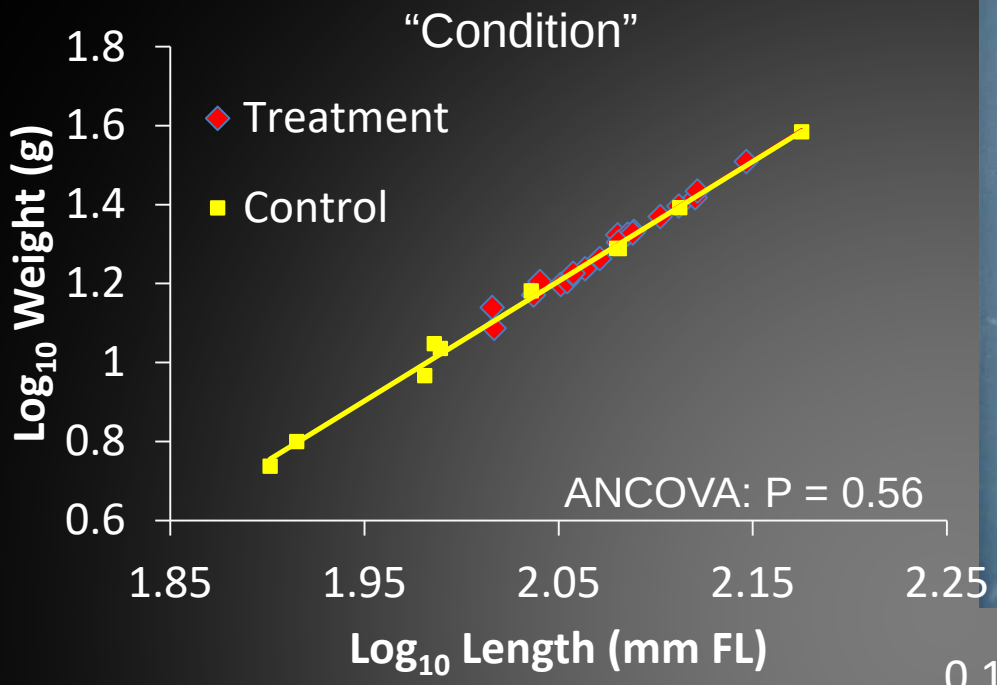


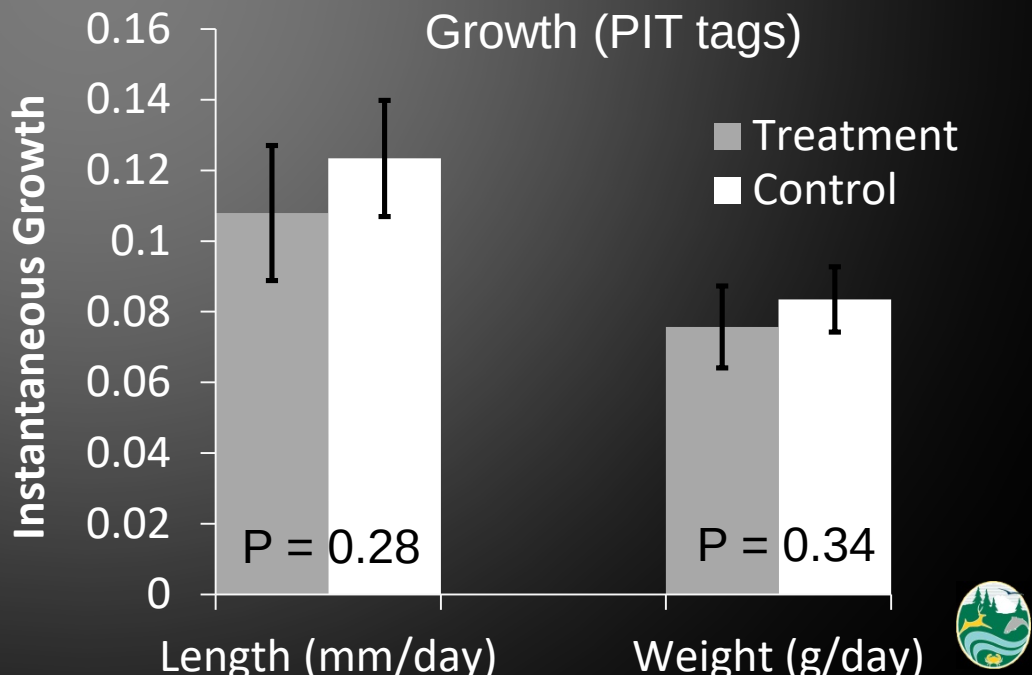




Combined Salmonid Biomass




"Condition"
Treatment
Control
ANCOVA: P = 0.56
Log_{10} Weight (g)
Log_{10} Length (mm FL)
1.8
1.6
1.4
1.2
1
0.8
0.6
1.85
1.95
2.05
2.15
2.25


Growth (PIT tags)
Instantaneous Growth
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Treatment
Control
P = 0.28
P = 0.34
Length (mm/day)
Weight (g/day)

Summary

- Weight of evidence suggests *O. mykiss* were not impacted by Coho Reintroduction in Taneum Creek under the stocking densities we achieved over 5 years
- Recommendations include using adult out-planting when attempting to reintroduce previously sympatric species, particularly in areas containing valued NTT