Glen Canyon Dam Adaptive Management Program

Brown Trout Workshop

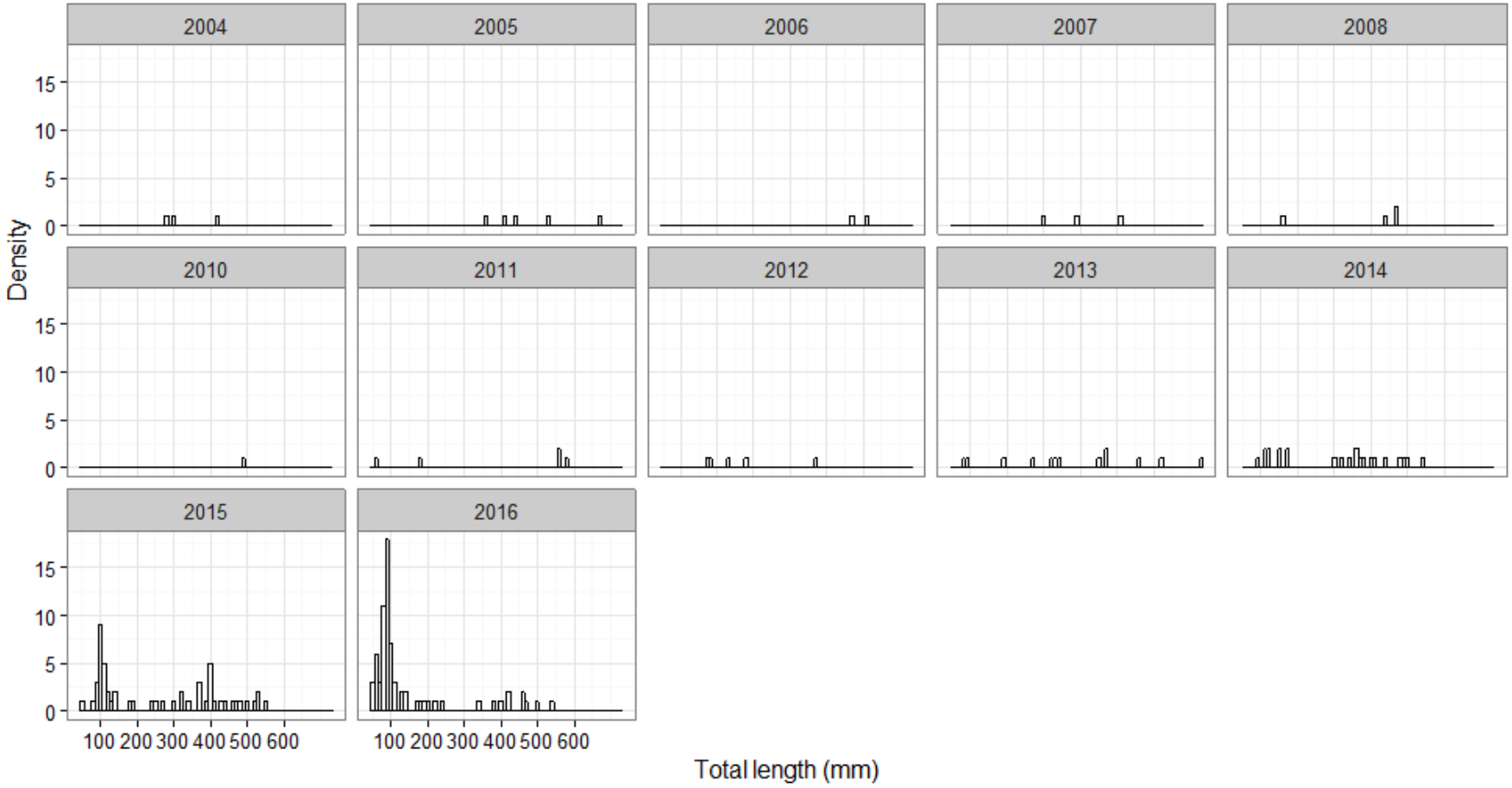
21-22 September 2017
Tempe, Arizona

Summary

Framework for Workshop

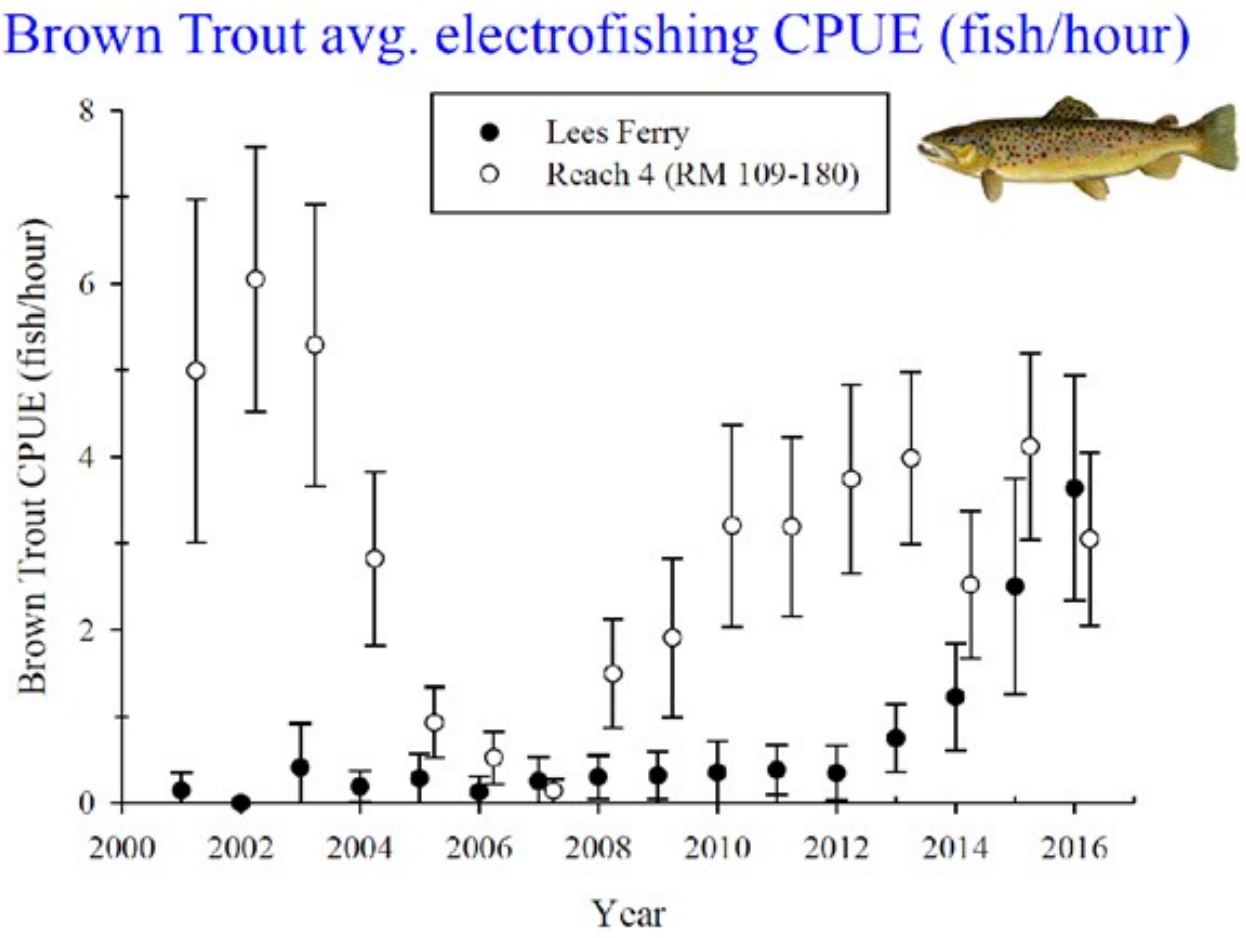
- What is the life-history background for brown trout, and what trends have we observed?
- What are some plausible hypotheses for the observed increase in brown trout at Lees Ferry?
- What might happen in the absence of intervention, if brown trout continue to increase?
- What are the qualitative trade-offs at play across possible interventions?

Length Frequency of Brown Trout in Lees Ferry Reach



USGS

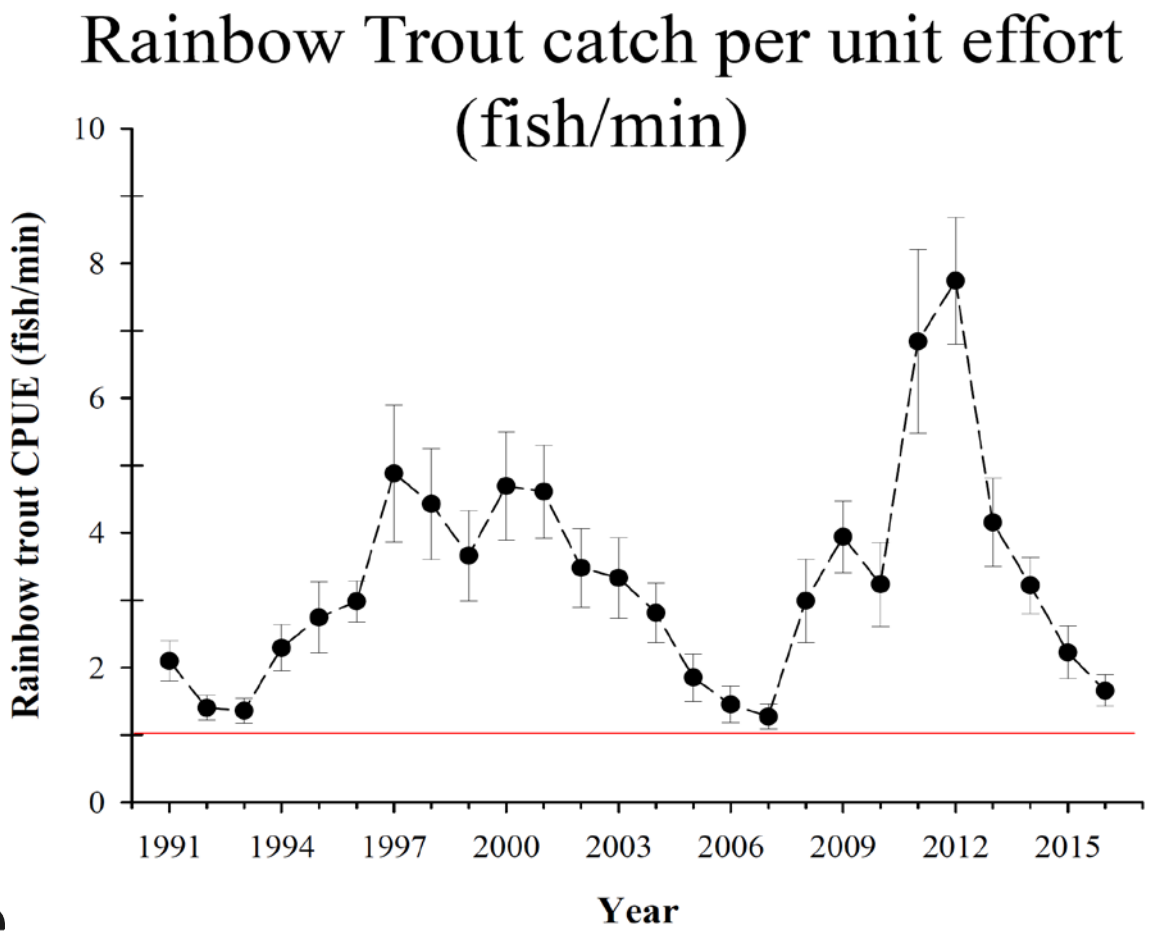
Brown Trout Catch per Unit Effort in 2 Reaches



USGS

Preliminary data, subject to change, do not cite or distribute

Rainbow Trout CPUE in Lees Ferry



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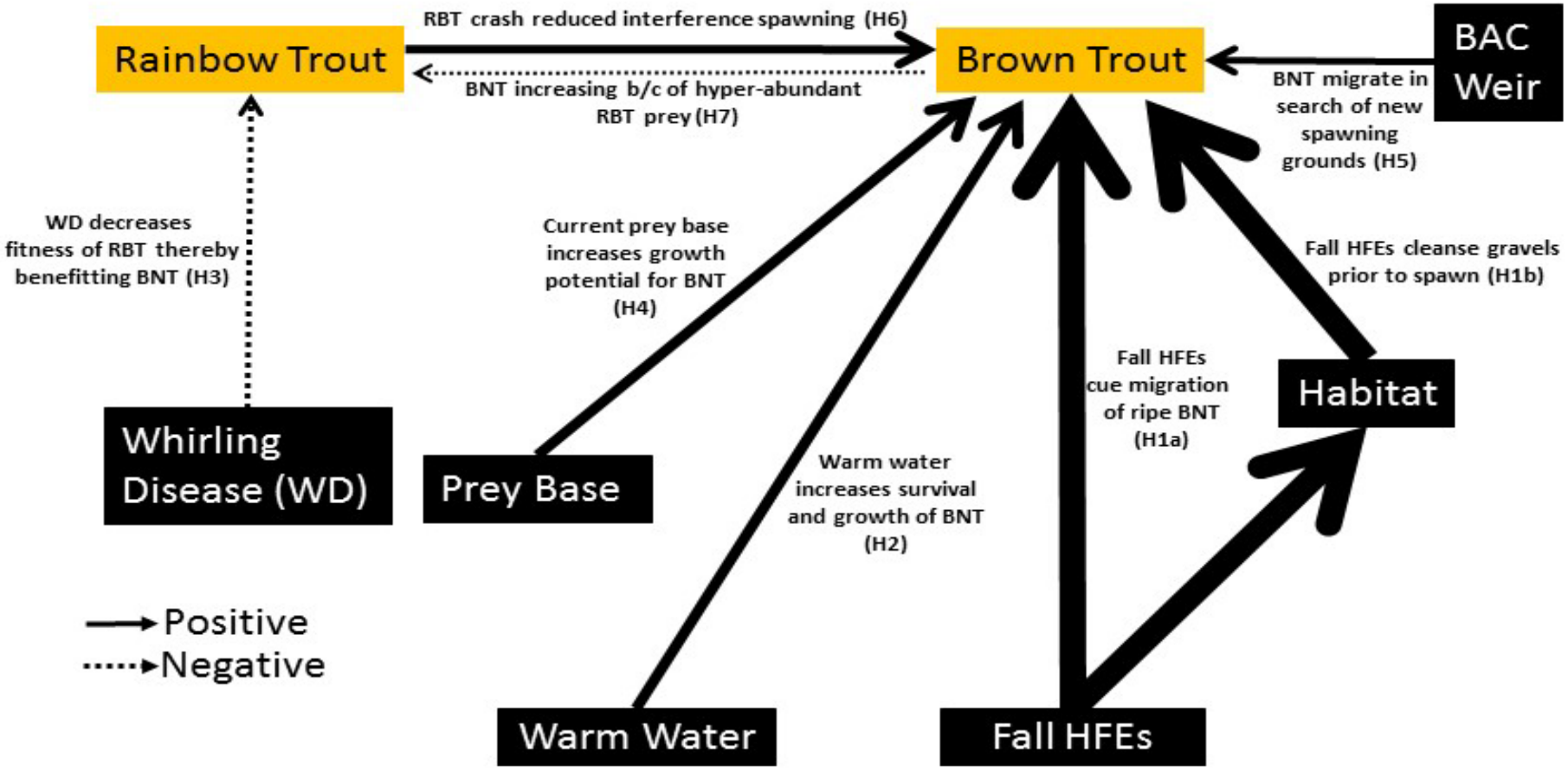
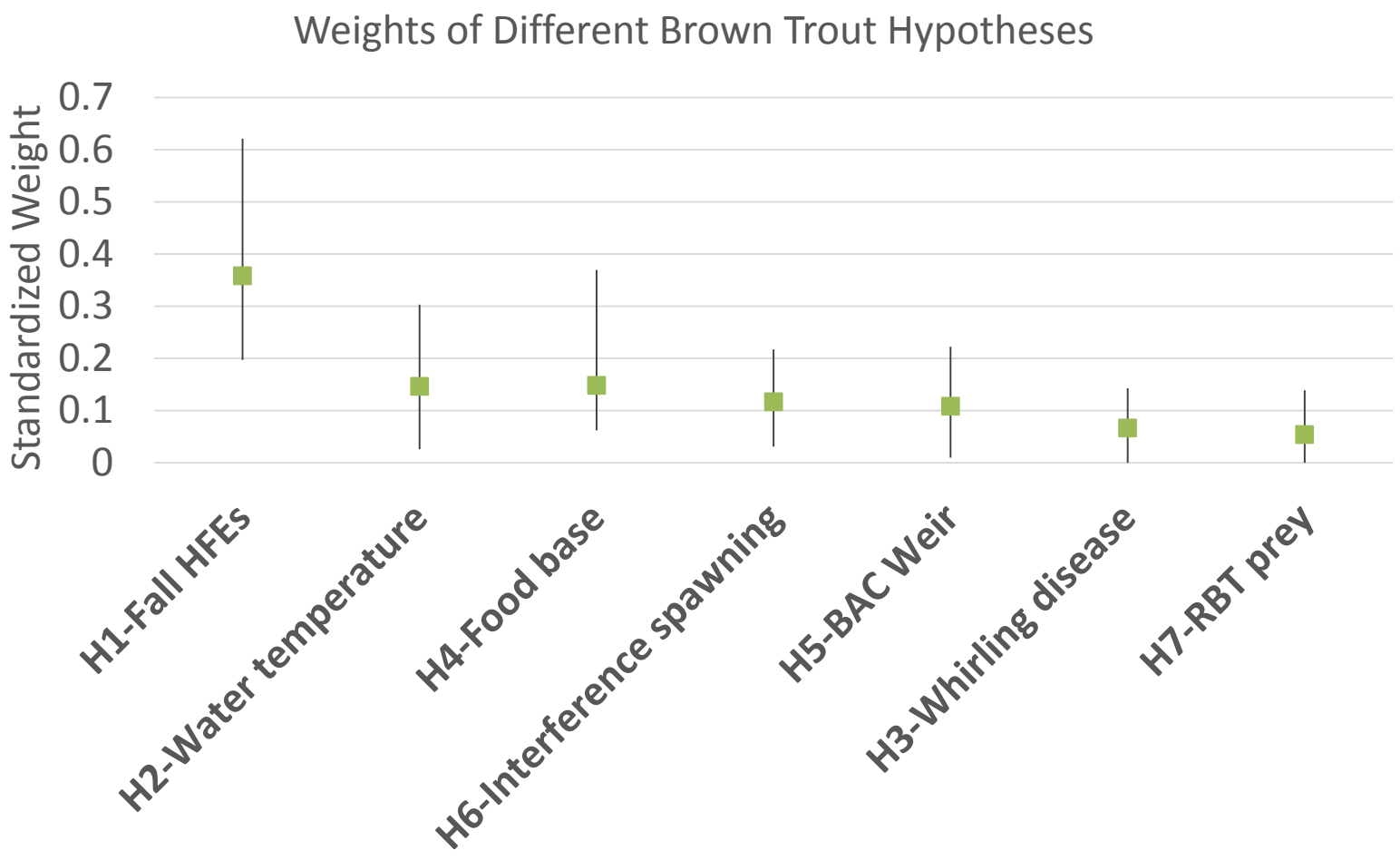
Root Causes Hypotheses





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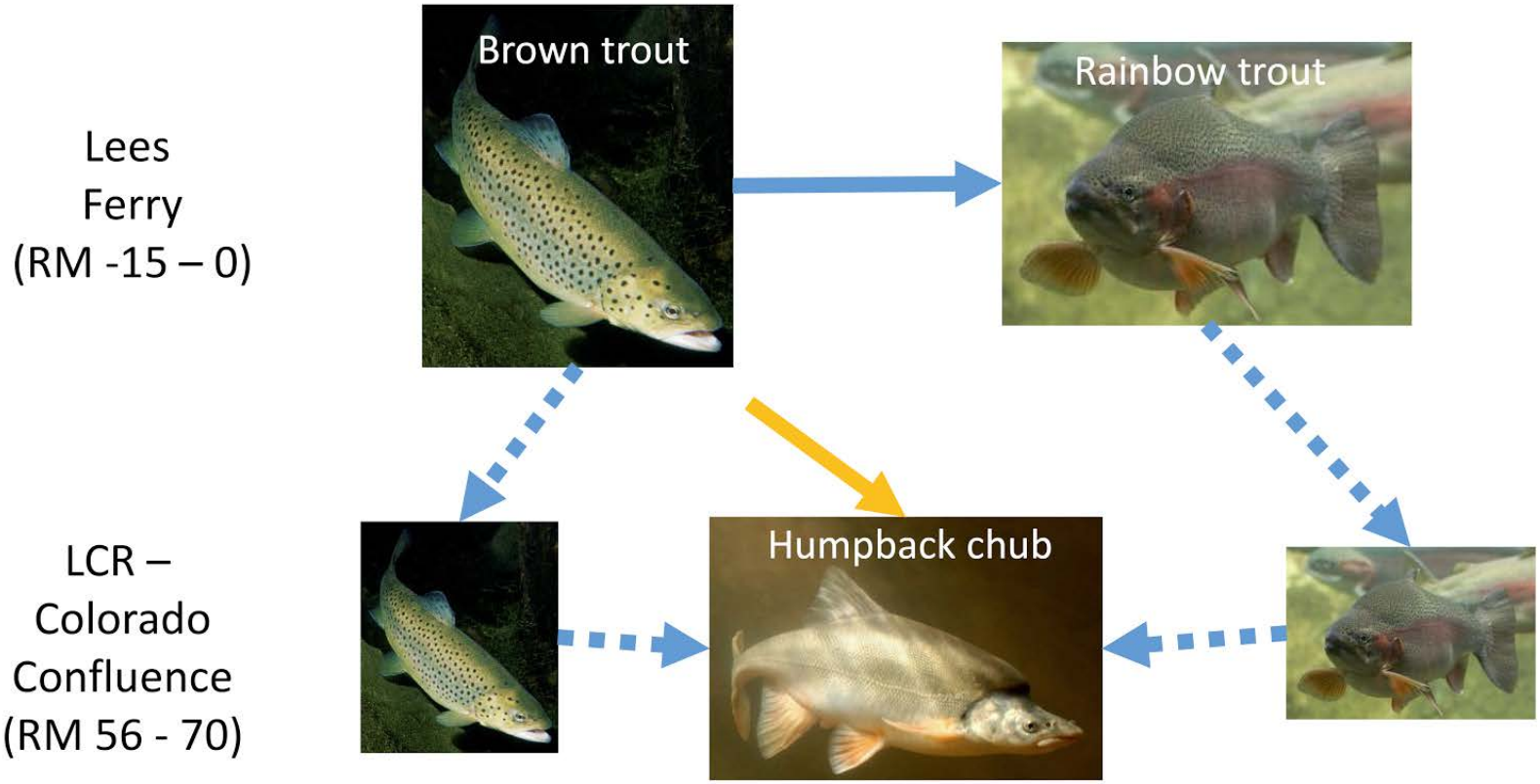
Break a big question into its parts – easier to answer little questions – reassess big questions at end



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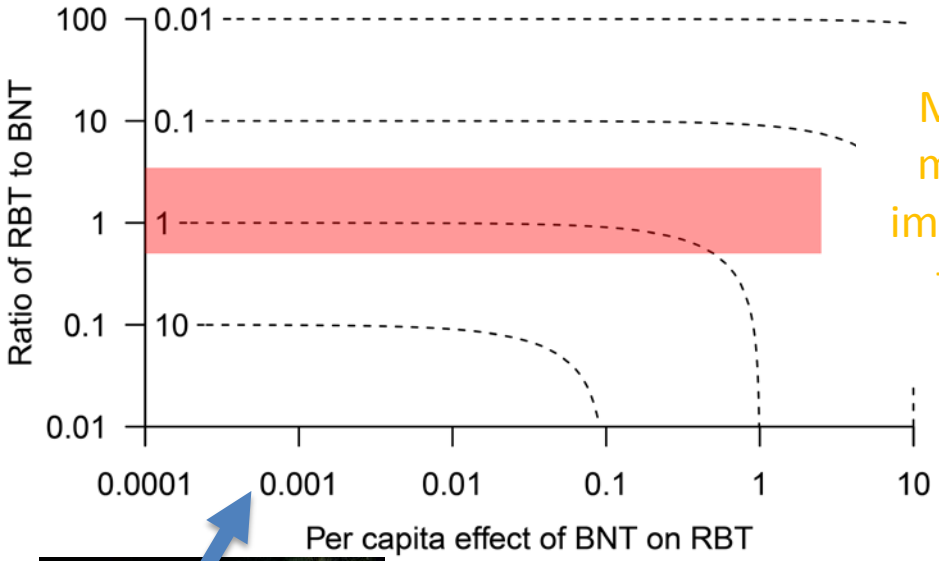
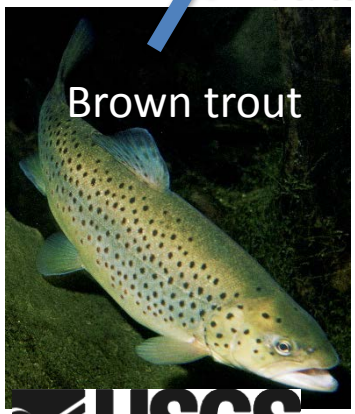
What is the risk to the rainbow trout fishery from brown trout?

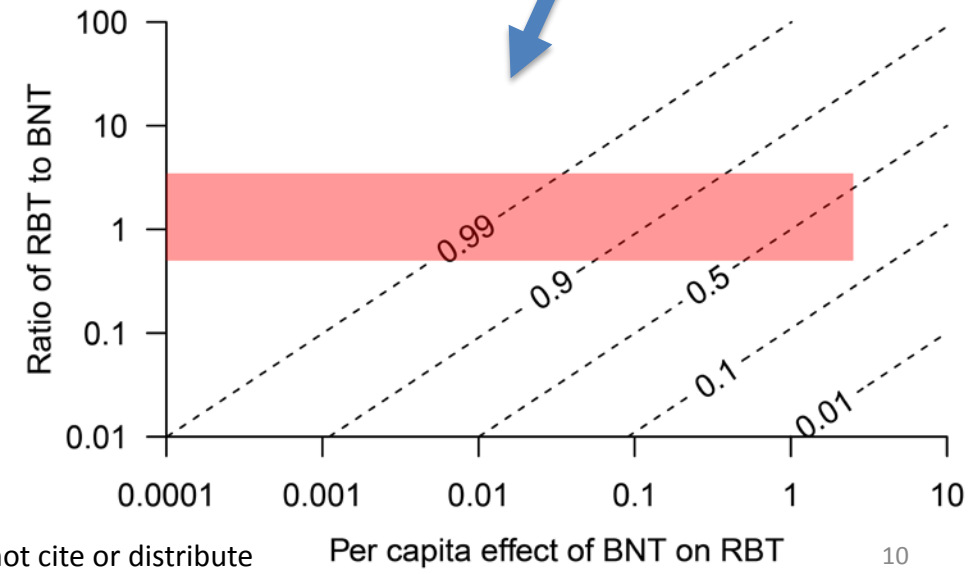


99K (80% CI: 50K – 100K)

Most likely, there is a minimal to moderate impact to rainbow trout fishery from brown trout.



63K
(80% CI: 27K – 138K)



Risk to humpback chub

- With just rainbow trout, this approach predicts 0% chance of average chub abundance lower than 7,000 (probably a little too optimistic).

- With brown trout and rainbow trout, 54% chance of exceeding this threshold.

- With just brown trout, 44% chance.

Take home: Large brown trout populations likely represent a substantial risk to humpback chub.

Comparison of individual brown trout management actions

Management and experimental actions	Relative efficacy	Economic cost	The condition of the rainbow trout fishery	Potential interactions with high-flow experiments	Tribal concerns with the taking of life
Brown trout removal at Lees Ferry	Moderate	Low	0	NA	Need input from tribes
Brown trout removal at the Little Colorado River	Moderate	Low	0	NA	Need input from tribes
Brown trout angling regulations	Not yet analyzed	Low	0	NA	Need input from tribes
Brown trout management flows	Not yet analyzed	Low	0	-	Need input from tribes
Brown trout YY stocking in Lees Ferry	Not yet analyzed	Low	0	NA	Need input from tribes

Notes: NA (not applicable), + (positive outcome), - (negative outcome), 0 (neutral outcome)

Comparison of individual brown trout experimental actions

Management and experimental actions	Relative efficacy	Economic cost	The condition of the rainbow trout fishery	Potential interactions with high-flow experiments	Tribal concerns with the taking of life
Suspension of fall high-flow experiments	Not yet analyzed	Moderate	+	-	Need input from tribes
Sediment triggered spring high-flow experiments	Not yet analyzed	Low	+	0/-	Need input from tribes
Annual spring high-flow experiments	Not yet analyzed	Moderate	+	-	Need input from tribes
Rainbow trout stocking in Lees Ferry	Not yet analyzed	Low	+	NA	Need input from tribes
Temperature control device	Not yet analyzed	High	+	0	Need input from tribes

Notes: NA (not applicable), + (positive outcome), - (negative outcome), 0 (neutral outcome)

Discussion

- What further assessments are needed (over the next 2 months to 2 years) to inform resource management decisions?

- What critical trade-offs need t be considered in selecting a management strategy, both in the short- and long-term?

- What critical uncertainty impedes a decision, and is research or experimental implementation needed?

- How should NPS, Reclamation, and AZGFD engage other AMWG members moving forward?

- What considerations should go into revision of the white paper?
- What considerations would you raise for the management agencies to consider regarding actions to address brown trout in the short term?
- What considerations would you raise for the research agencies to consider regarding studies to resolve uncertainty about brown trout in the short term?