Are there any more surprises?
Bioeconomic modeling and adaptive management

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Adaptive Management Workgroup, Glen Canyon Dam Adaptive Management Program Webinar, August 20, 2020
Schools of Adaptive Management

Resilience-Experimentalist

- Uncertainty is difficult to anticipate in advance
- Experiments provide accelerated learning about the system

Decision-Theoretic

- Uncertainties are explicitly estimated and included in predictive models
- Resolve uncertainty to the degree that such resolution will improve management

Chub and Trout Modeling

Bair, L.S., et al., 2018, Identifying cost-effective invasive species control to enhance endangered species populations in the Grand Canyon, USA. Biological Conservation, 220, 12-20, [https://doi.org/10.1016/j.biocon.2018.01.032](https://doi.org/10.1016/j.biocon.2018.01.032)
Modeling Objective

Develop a bioeconomic model to identify cost-effective management strategies for rainbow trout that achieve conservation objectives for the humpback chub.
Bioeconomic Model Results
Model Extensions: Translocations

https://azdaislysun.com/humpback-chub-translocation/image_4012f028-bd72-5db2-8e53-da13956bfc8f.html
Humpback Chub Translocation

Preliminary data – do not cite
Model Extensions: Trout Management Flows

https://www.nytimes.com/2016/05/22/opinion/unplugging-the-colorado-river.html
TMF Model Results

![Graph showing Humpback Chub Abundance over Rainbow Trout in Juvenile Chub Monitoring Reach with different flow scenarios: Mechanical Removal and Trout Management Flow.]

Preliminary data – do not cite
Future Applications: Brown Trout
Are there any more surprises?