

Status of the Glen Canyon Rainbow Trout Fishery

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**Adaptive Management
Workgroup Meeting
August 20-21, 2025**



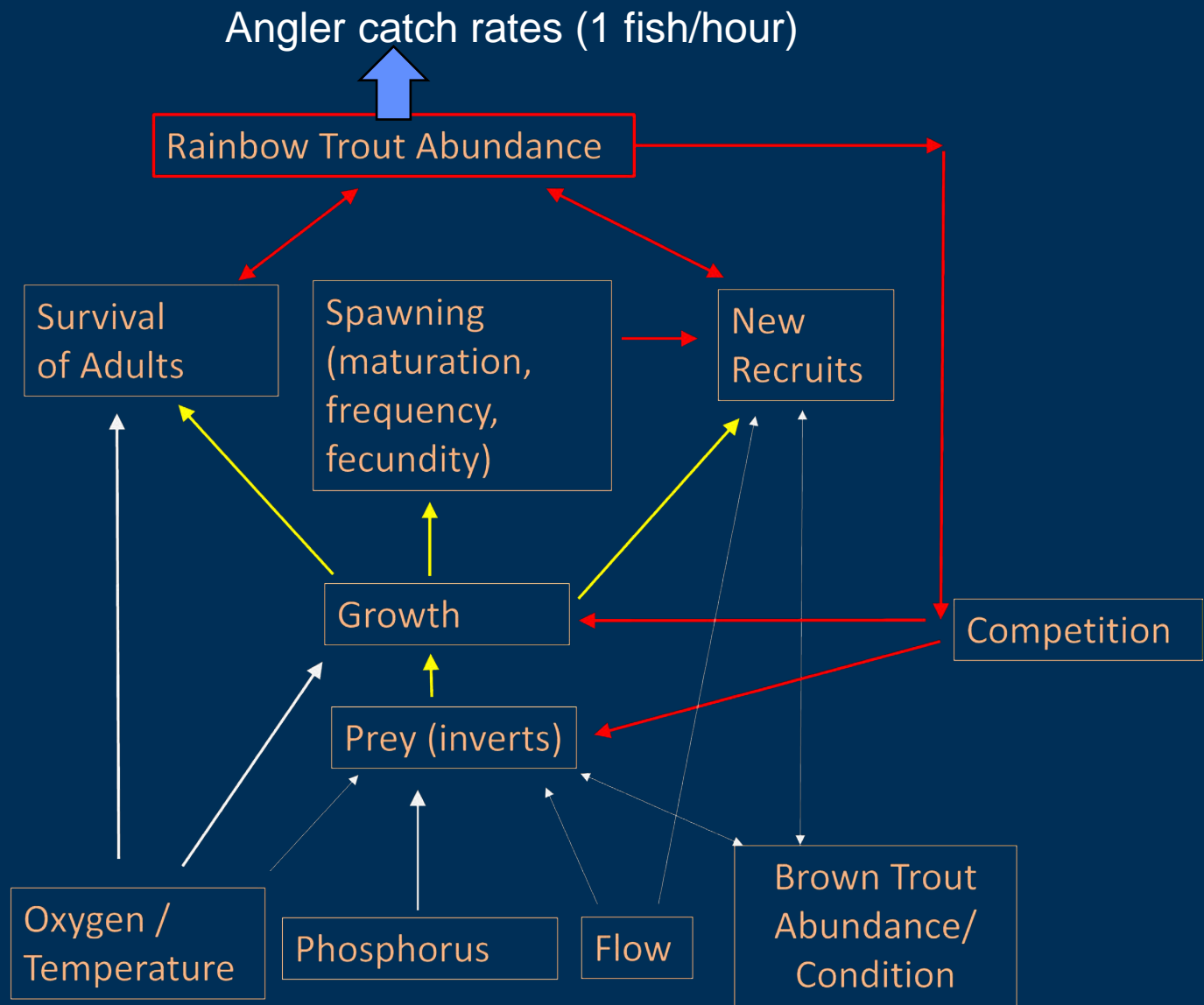
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Background & Outline

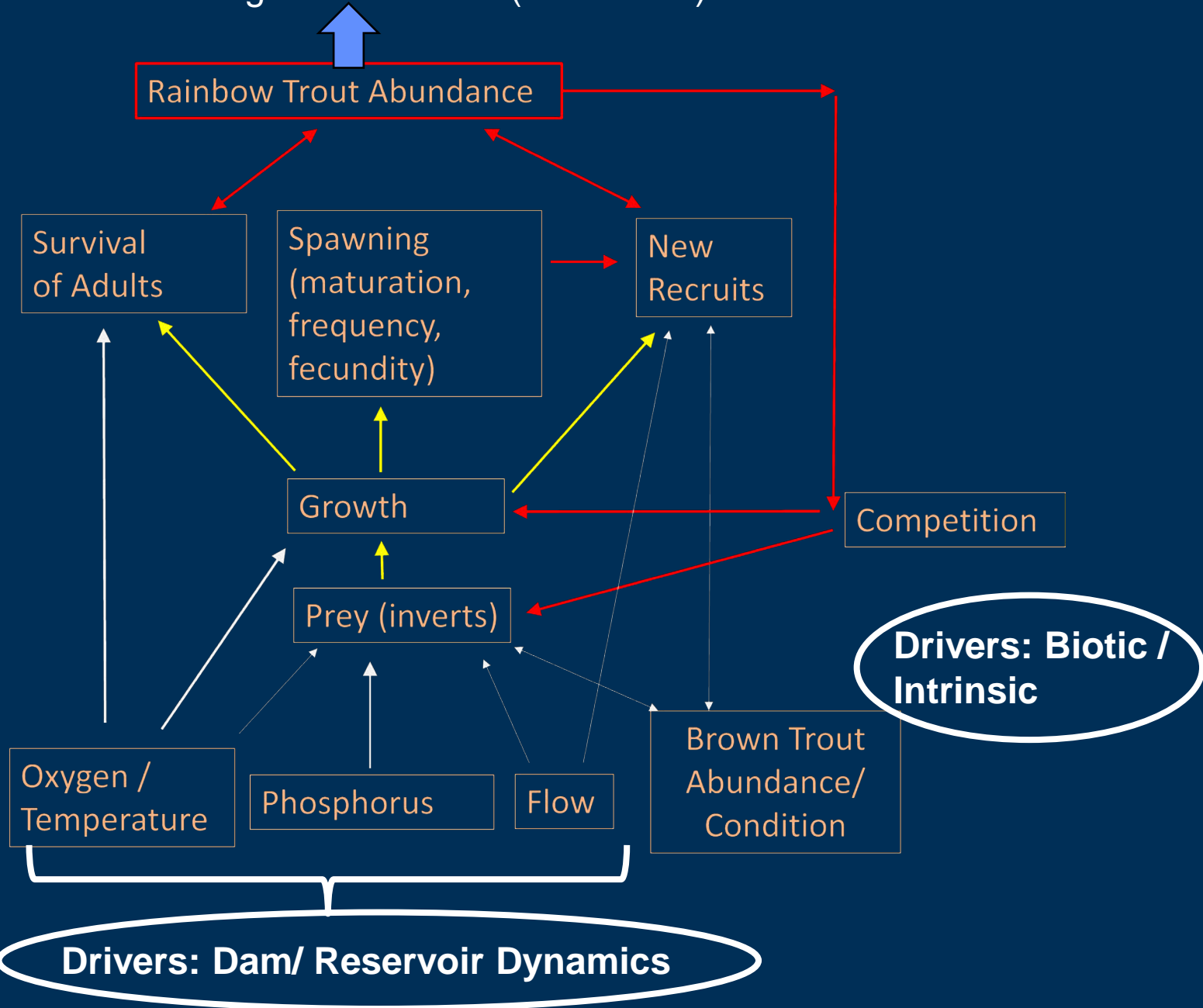
- Are we meeting the Long-term Experimental and Management Plan (LTEMP) goal?
 - *“Achieve a healthy high-quality recreational Rainbow Trout fishery in Glen Canyon National Recreation Area...”*
 - Metrics –
 - Angler catch rates
 - Rainbow Trout abundance
- Conceptual model of Rainbow Trout population dynamics and drivers
- Review recent trends -
 - Arizona Game and Fish Department (AZGFD) angler catch rates (creel)
 - Trout Recruitment and Growth Dynamics (TRGD) data –
 - Trends in Rainbow Trout condition, growth, abundance, survival (through April 2025)
 - Electrofishing catch rates (through June 2025)

Angler catch rates (1 fish/hour)

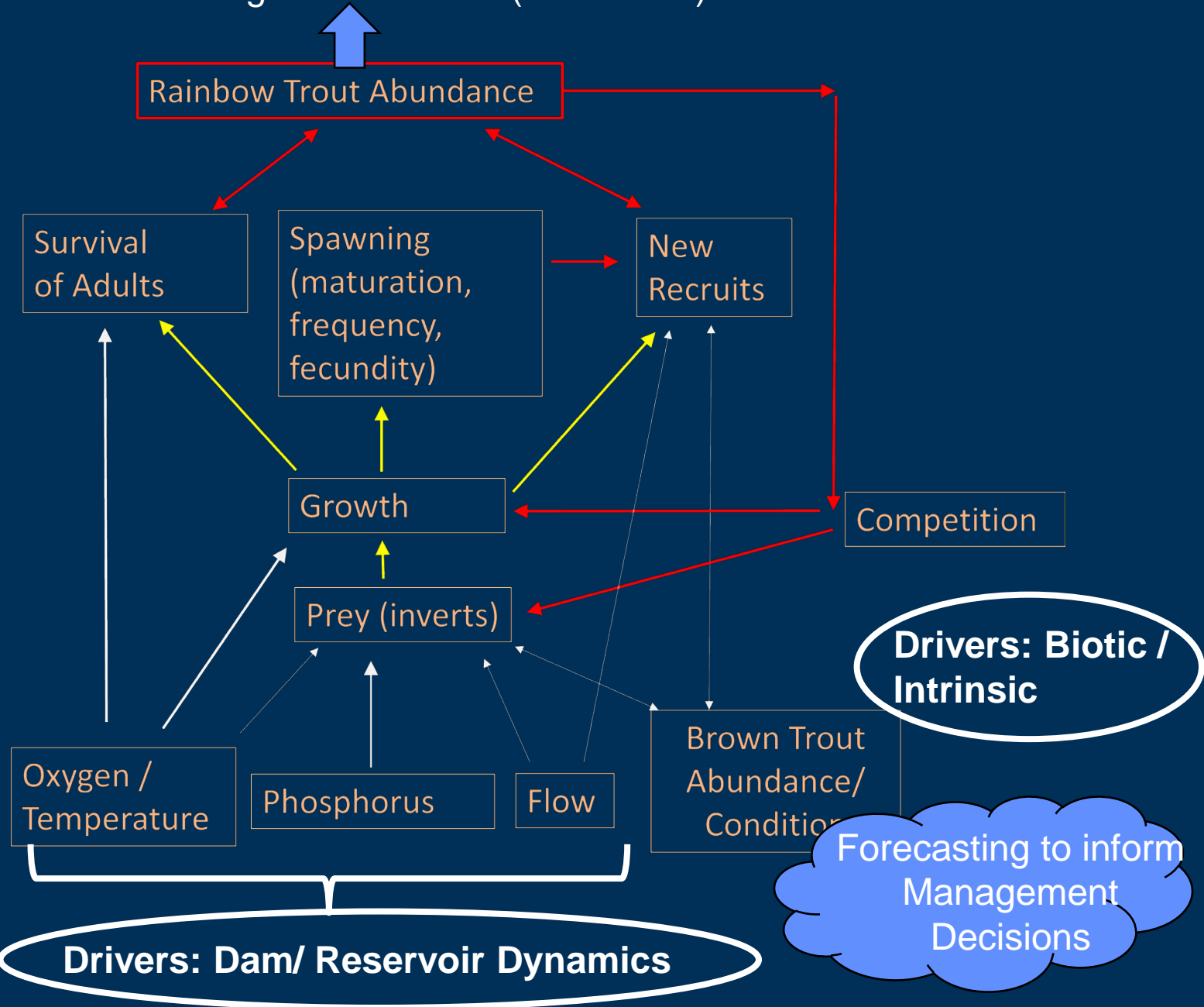




Angler catch rates (1 fish/hour)



Angler catch rates (1 fish/hour)



Methods: Angler Surveys (Creel)

2025 Data: (Through July 31, 2025)

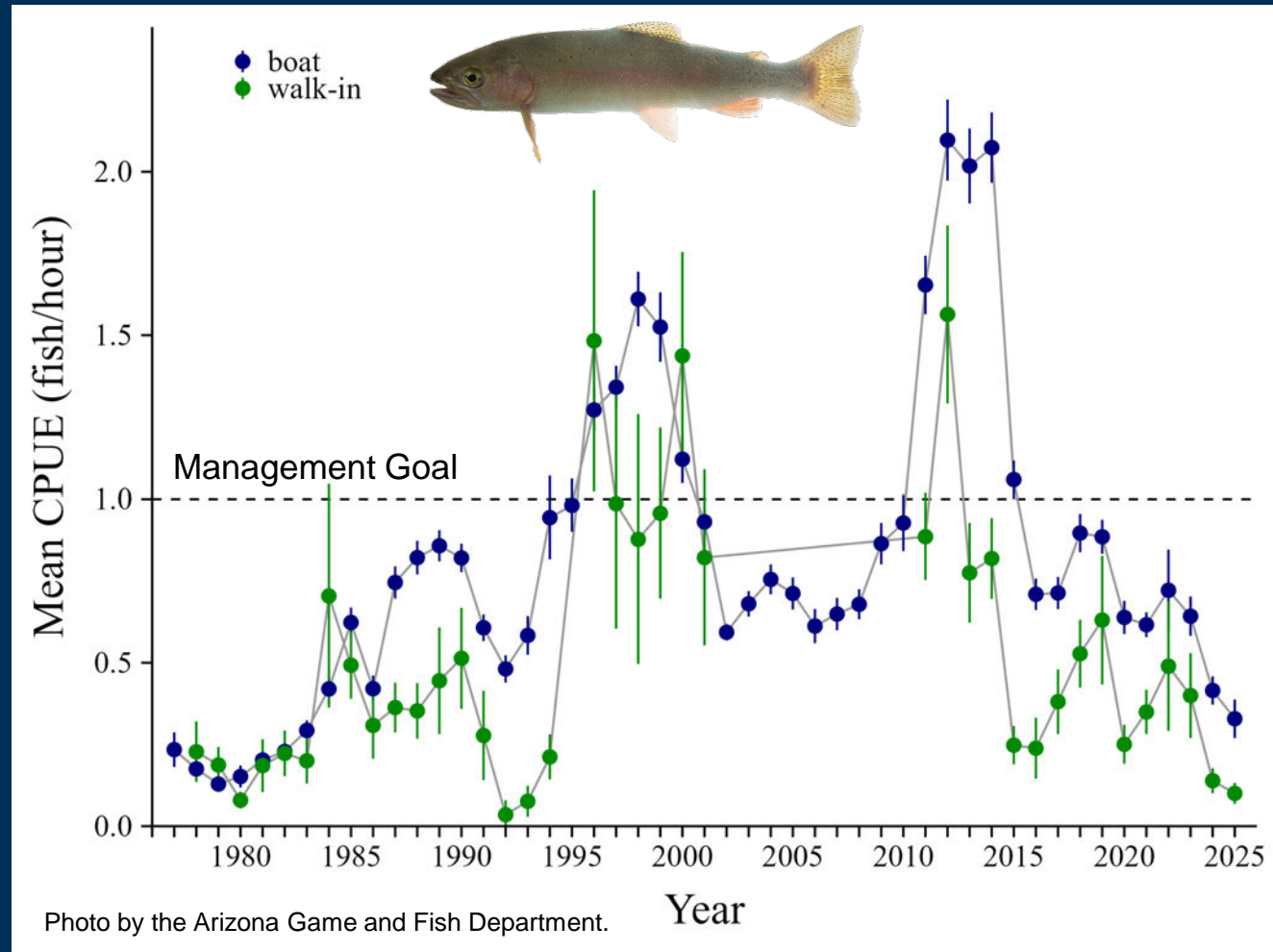
- 42 creel surveys
- Walk-in interviews (n=271)
- Boat ramp interviews (n=254)



Photo by the Arizona Game and Fish Department.

LTEMP Metric: Angler Catch

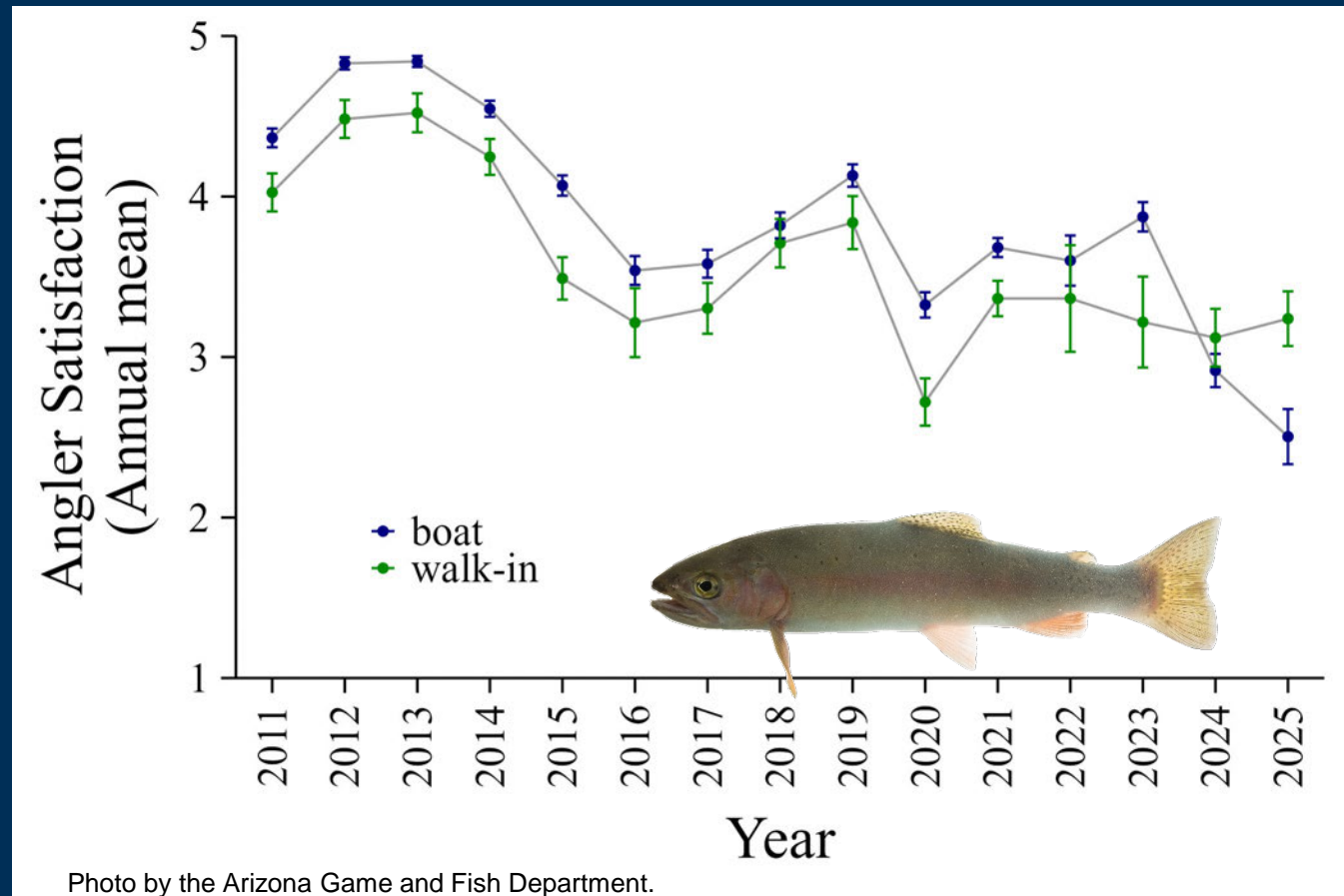
- Rainbow Trout Catch per unit effort (fish/hour)
- January-July for all years (1977-2025)



Preliminary unpublished data, do not cite

Angler Satisfaction

- Anglers are asked to rate the quality of the fishery on a scale of 1-5



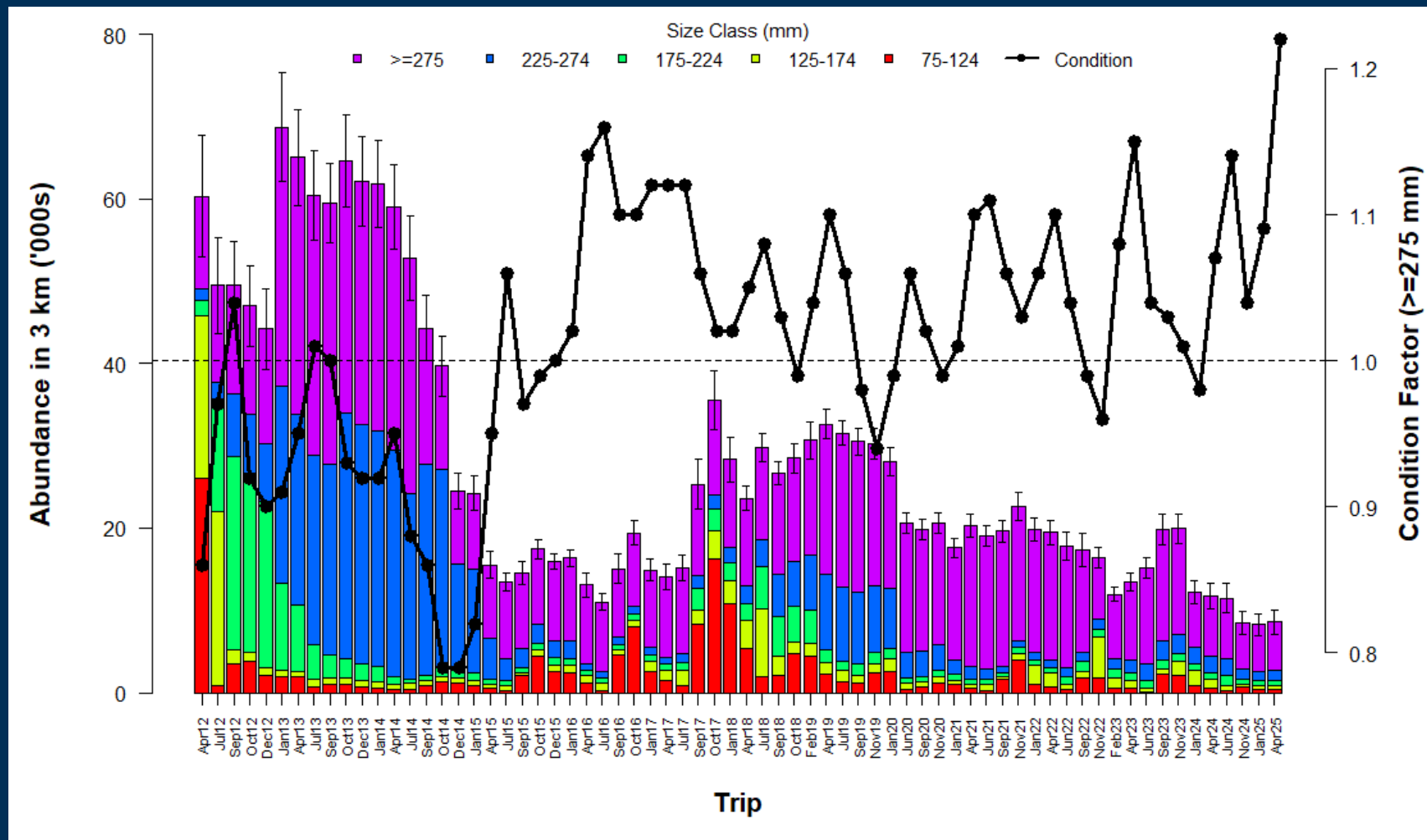
Preliminary unpublished data, do not cite

Methods

- **TRGD sampling:**
 - 2-pass mark-recapture sampling
 - 4 trips per year
 - Allows for monitoring of seasonal dynamics
 - 2 sites
 - ~ -12 mile (site 1A)
 - ~ -4 mile (site 1C)*
- *Longest time series

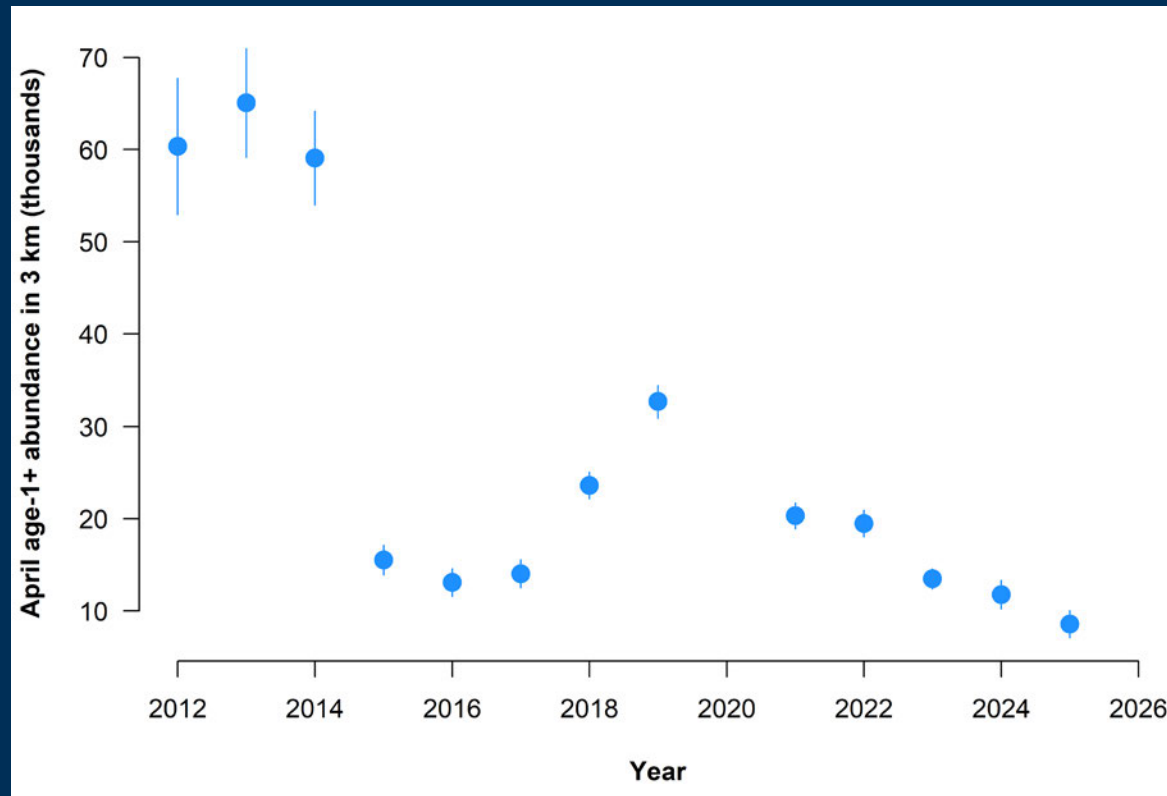


Rainbow Trout Abundance – Site 1C

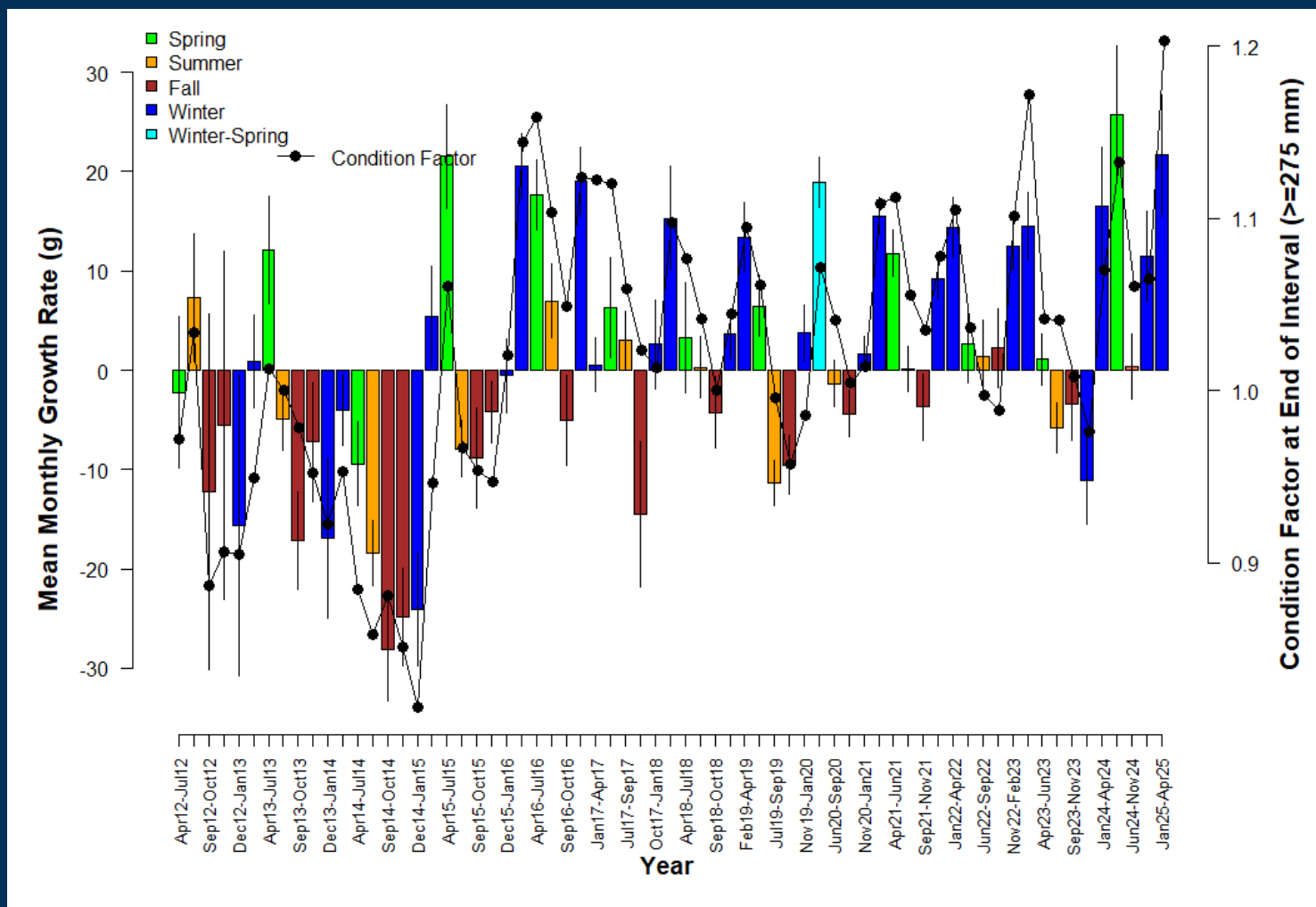


LTEMP Metric – Annual Abundance

- Trout Recruitment and Growth Dynamics data:
 - Annual total abundance (April) from reach 1C
 - Represents fish one year old and older (age-1+)

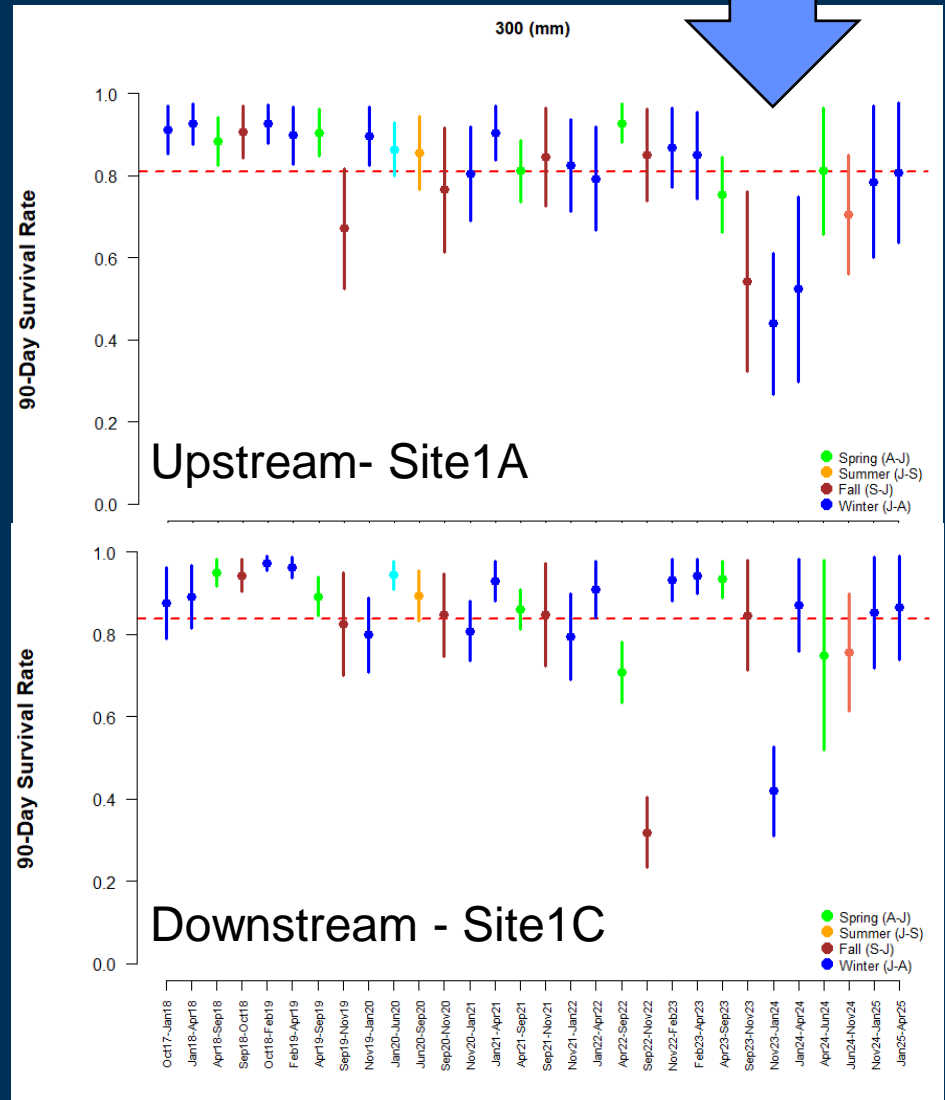


Rainbow Trout Growth – Site 1C



Rainbow Trout Survival

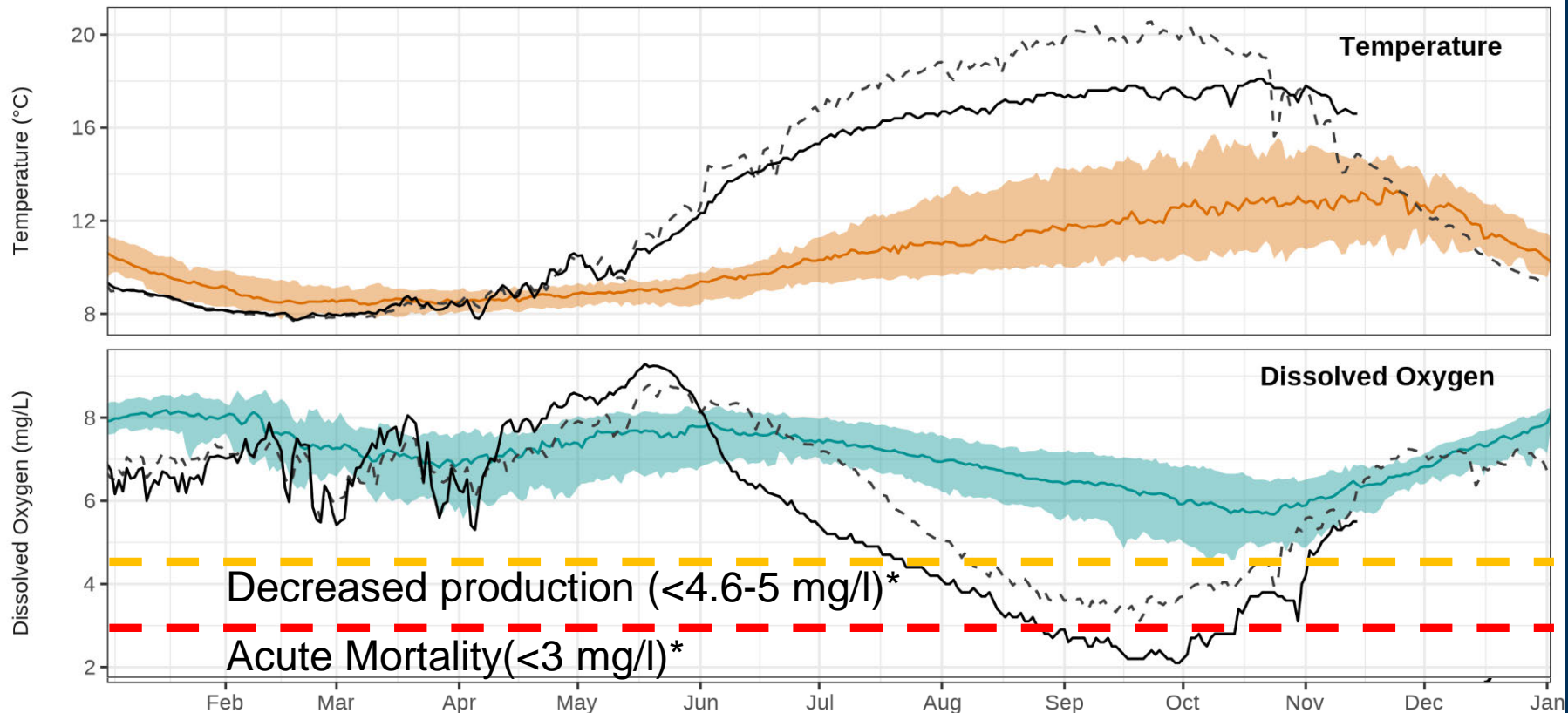
- Seasonal survival of large fish (300 mm)
- Long duration of reduced survival closer to the Dam
- Driver?



Preliminary unpublished data, do not cite

Water Quality

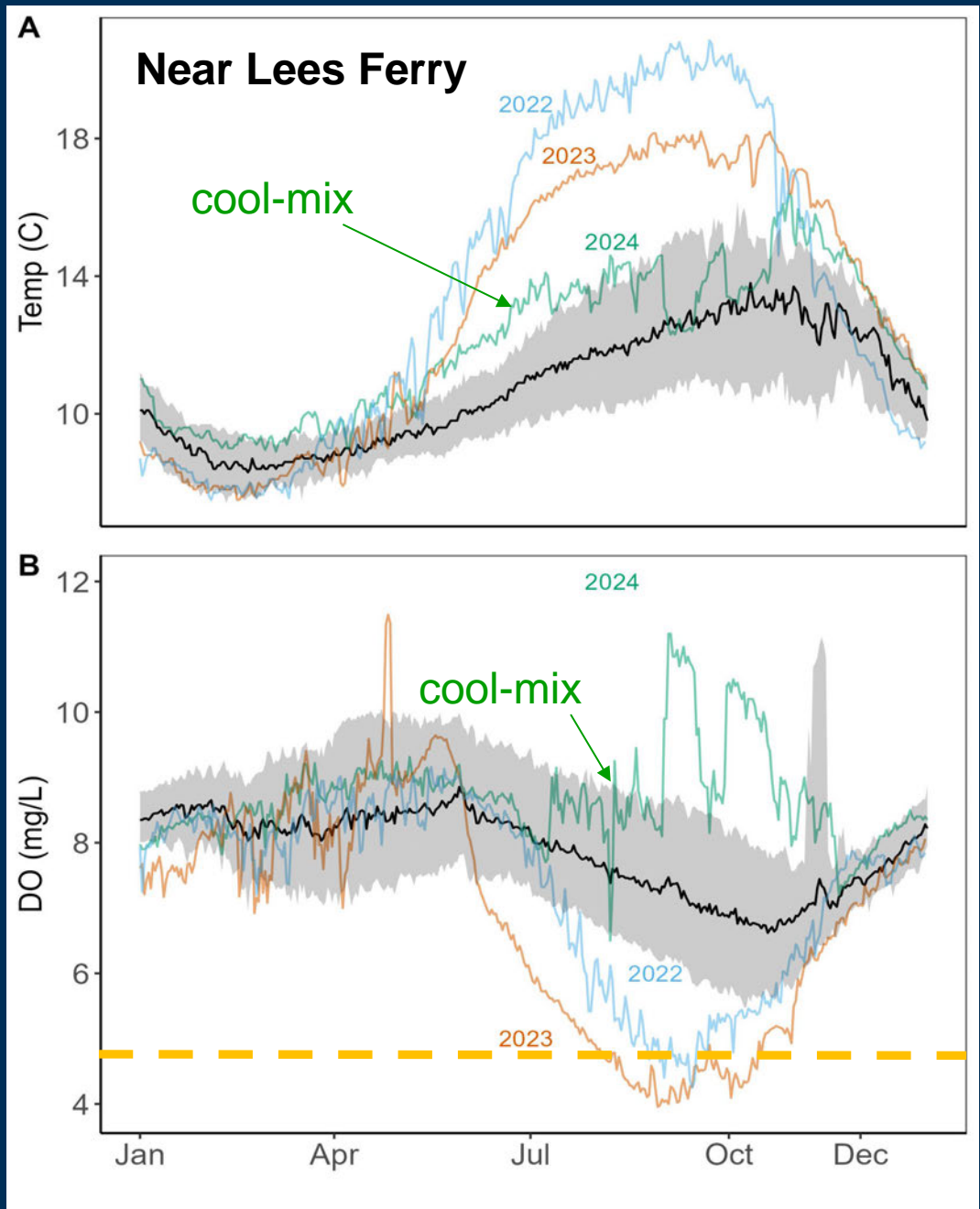
Water Quality Conditions Immediately Below Glen Canyon Dam



The colored lines and shaded regions depict daily trends from 2009 to 2021 as the 10th, 50th, and 90th quantiles. The thick blank line represents this years (2023) data and the dashed line, 2022. Data collected after 06/01/2023 is provisional.

Water Quality

- Low survival corresponds to warm temperatures, low dissolved oxygen (2023-24)
- Coolmix may have offset potential temperature effects



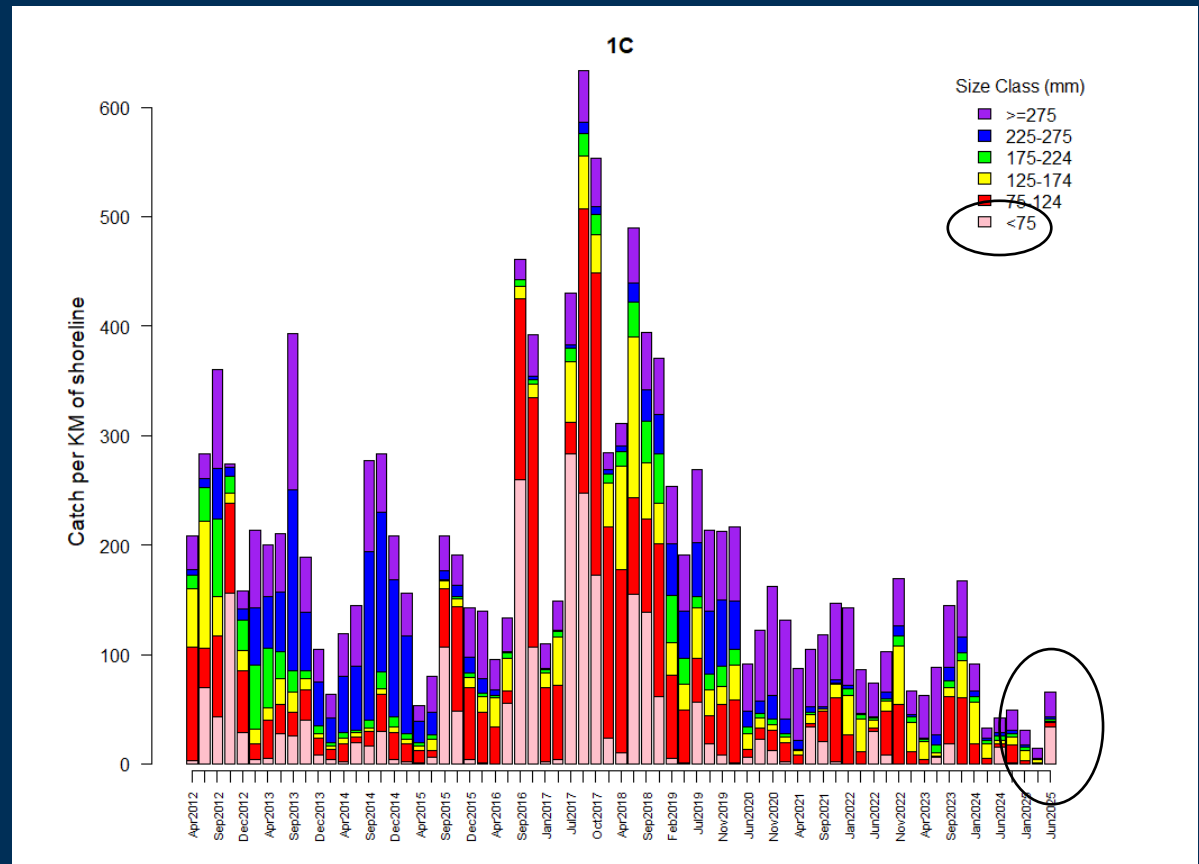
B. Deemer (USGS) – unpublished data, do not cite

Rainbow Trout Recruitment

- Catch rates (raw)-
through June
2025*
- Evidence of
recruitment
(fish < 75 mm)



Photo by Lindsay Hansen/U.S. Geological Survey



Preliminary unpublished data, do not cite

*Interpretation of raw catch data may be subject to variation in capture probability

Summary

- Angler catch rates below AZGFD objective
- Abundance lowest estimated, recent declines in survival observed –
 - Suggests unprecedented, extended periods of low dissolved oxygen were a driver (differs from 2014)
- Spring 2025 growth data, some young-of-year trout present, suggests a rebound is possible
- Next – address uncertainties in drivers of population growth –
 - River conditions (e.g., temperature, dissolved oxygen), and biotic factors (food, competitors, predators)

Questions?



Photo: Michael Chow/The Republic

DAVID HERASIMTSCHUK

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For more information: [https://www.usgs.gov/centers/southwest biological science center/science/rainbow trout colorado river grand canyon](https://www.usgs.gov/centers/southwest%20biological%20science%20center/science/rainbow%20trout%20colorado%20river%20grand%20canyon)