

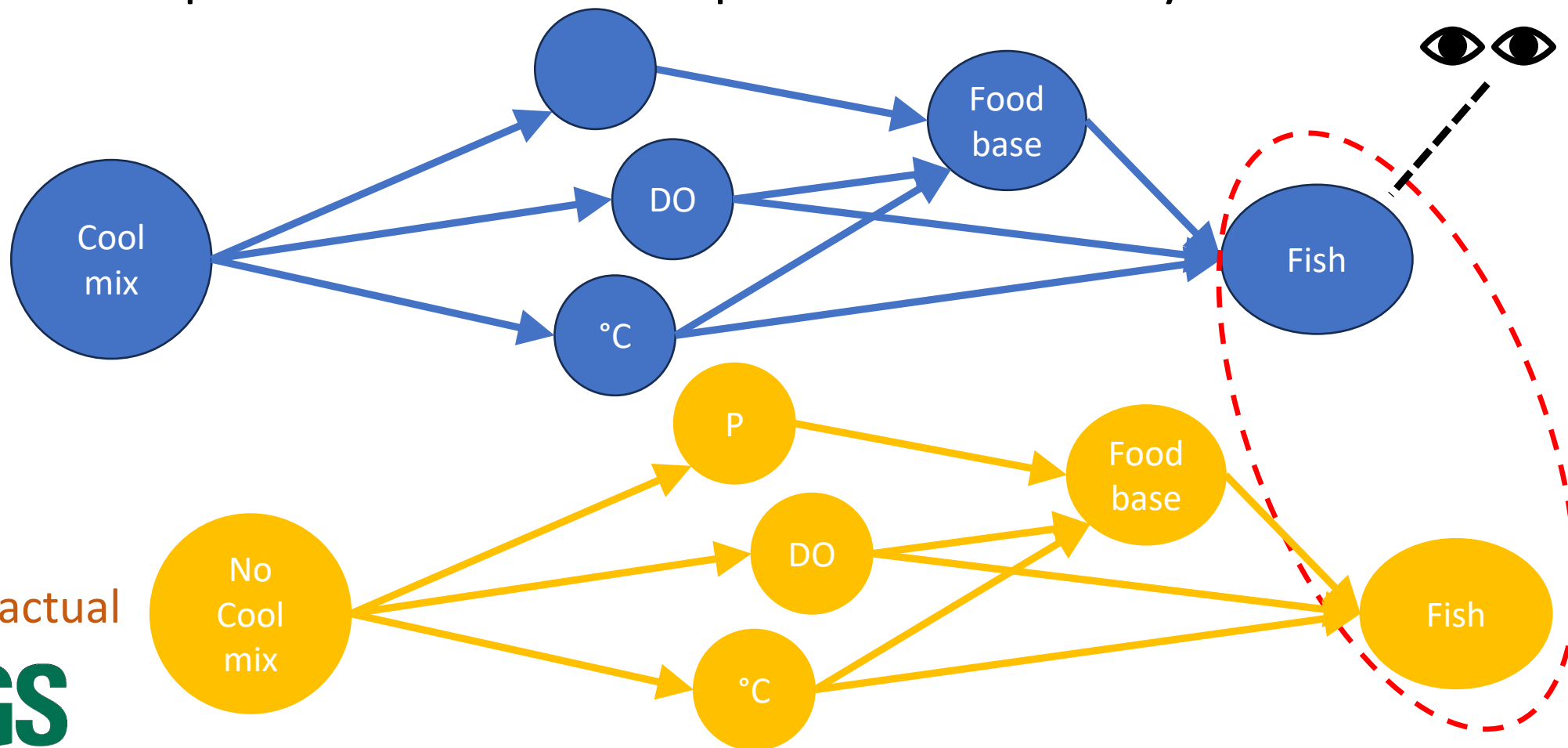
RESPONSE OF SMALLMOUTH BASS AND OTHER SPECIES TO COOL MIX

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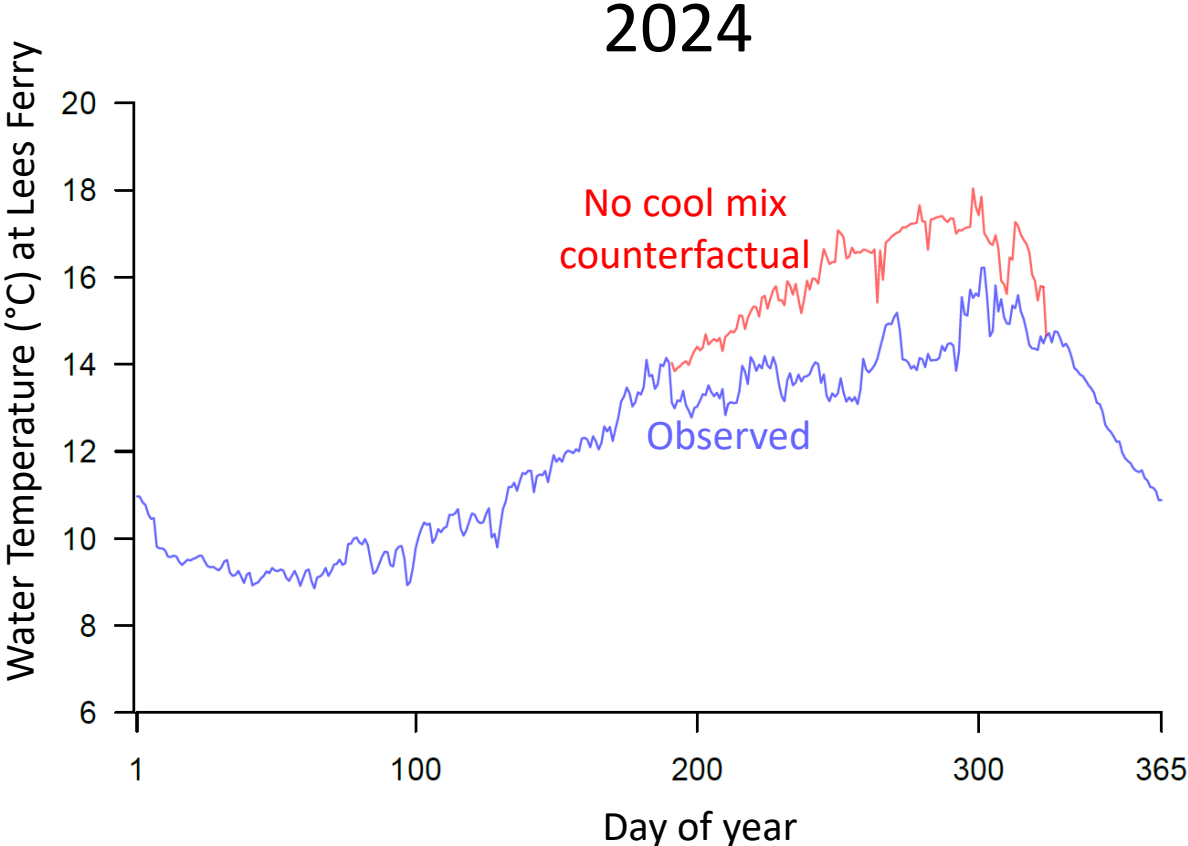
What were the effects of cool mix on various resources?

- A practical question that is also a question of causality.



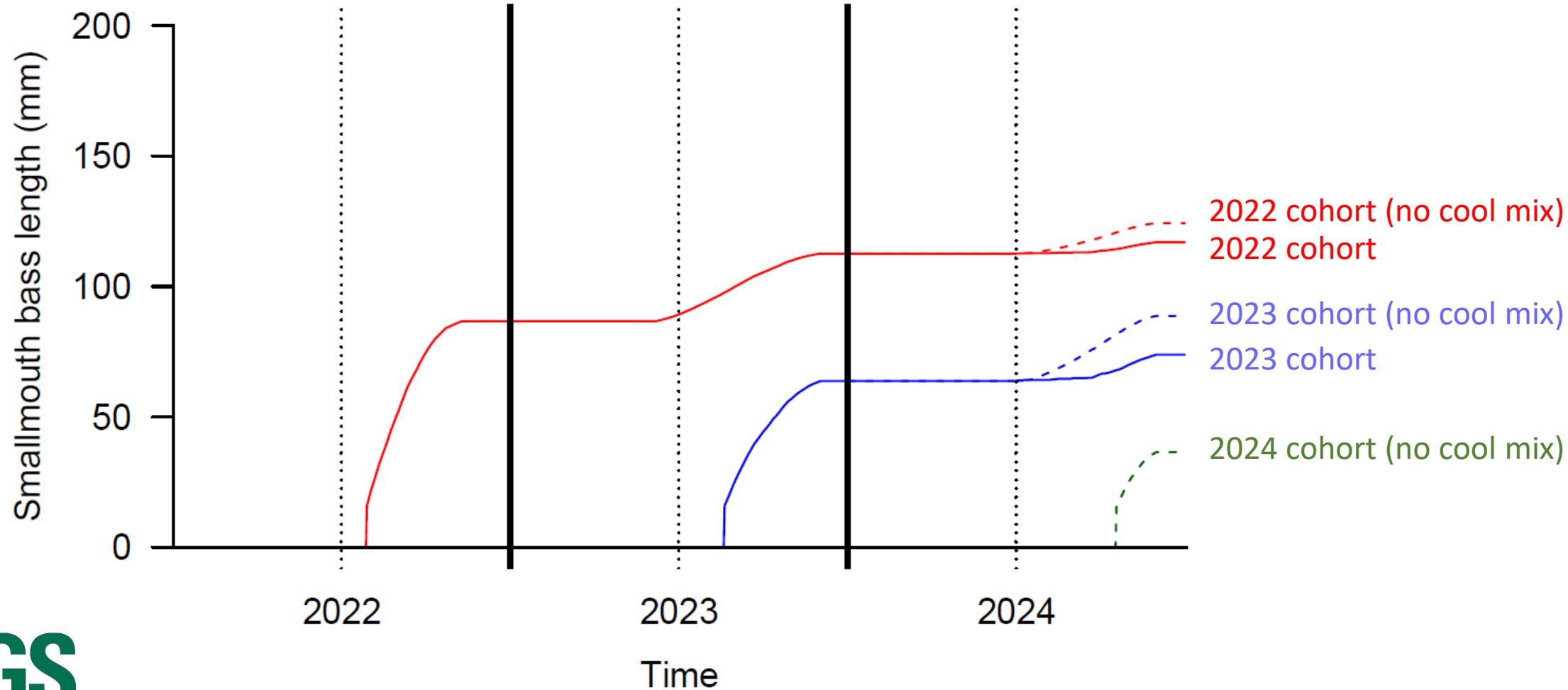
Counterfactual

Water temperature – what do we think would have happened without cool mix

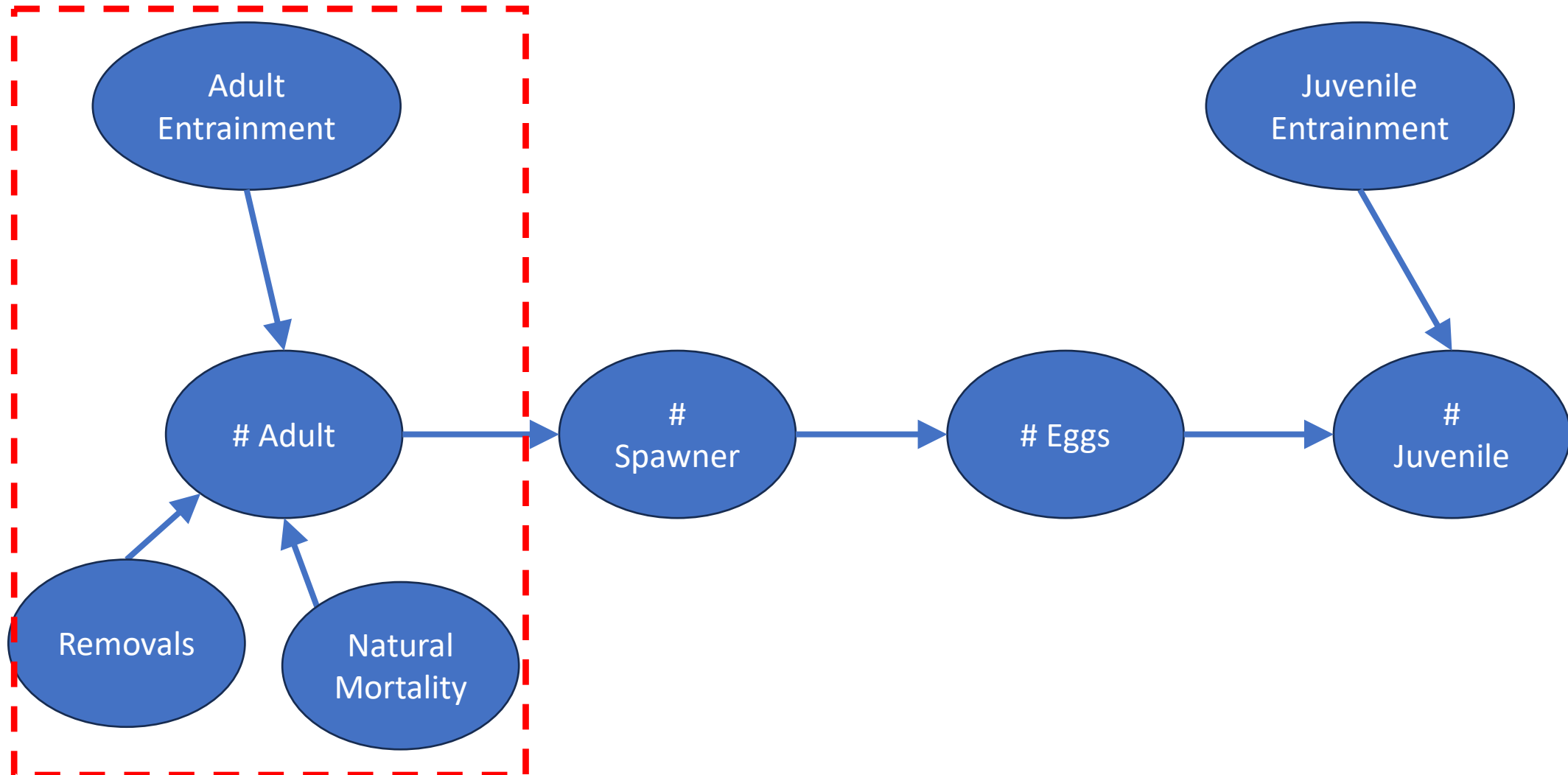


Smallmouth Bass Growth Model

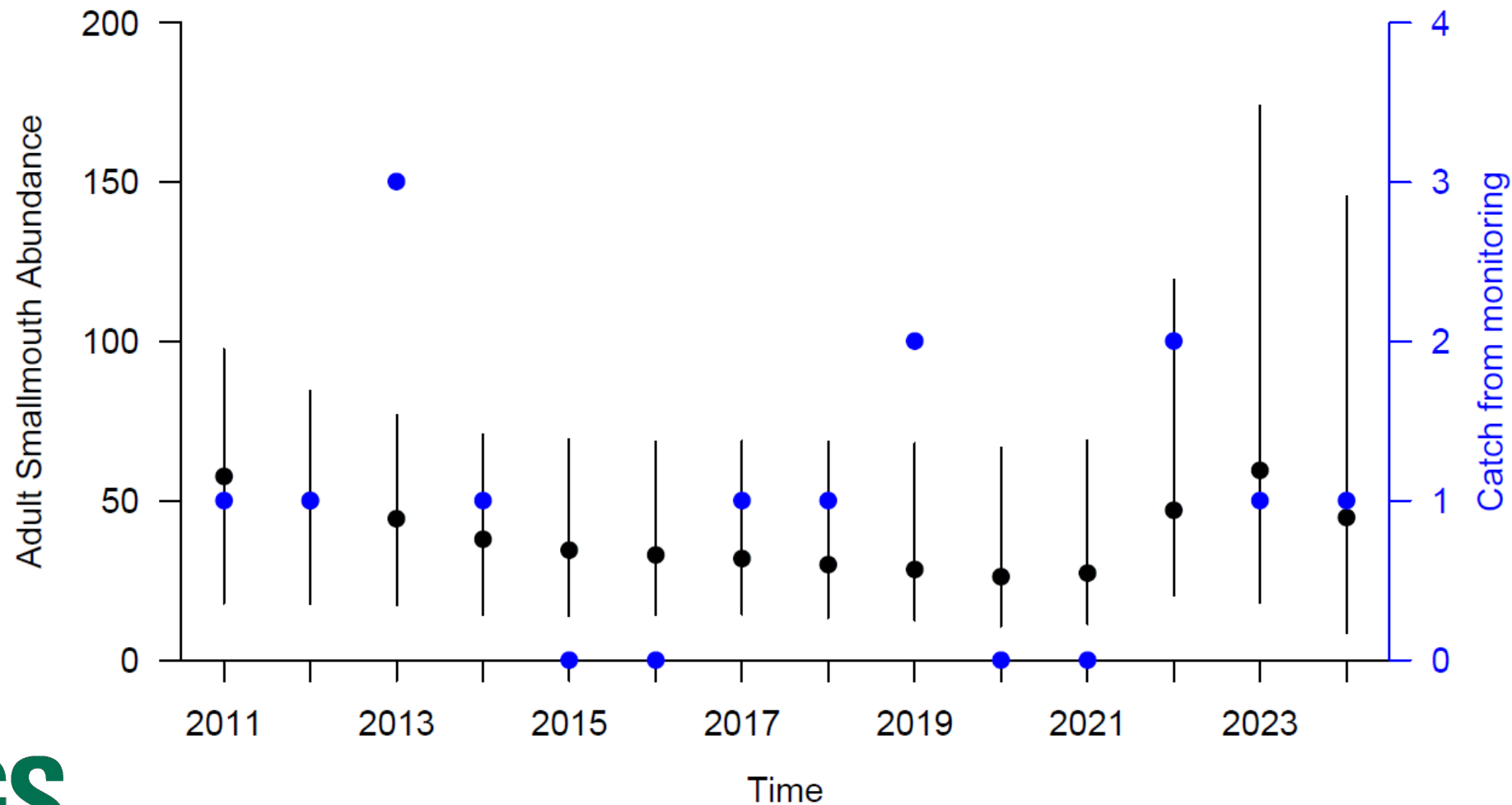
fitted to electrofishing data from Lees Ferry and PBR reaches



No confirmed age-0 Smallmouth Bass in 2024 (or 2025), but how many might there have been if cool mix had not occurred?

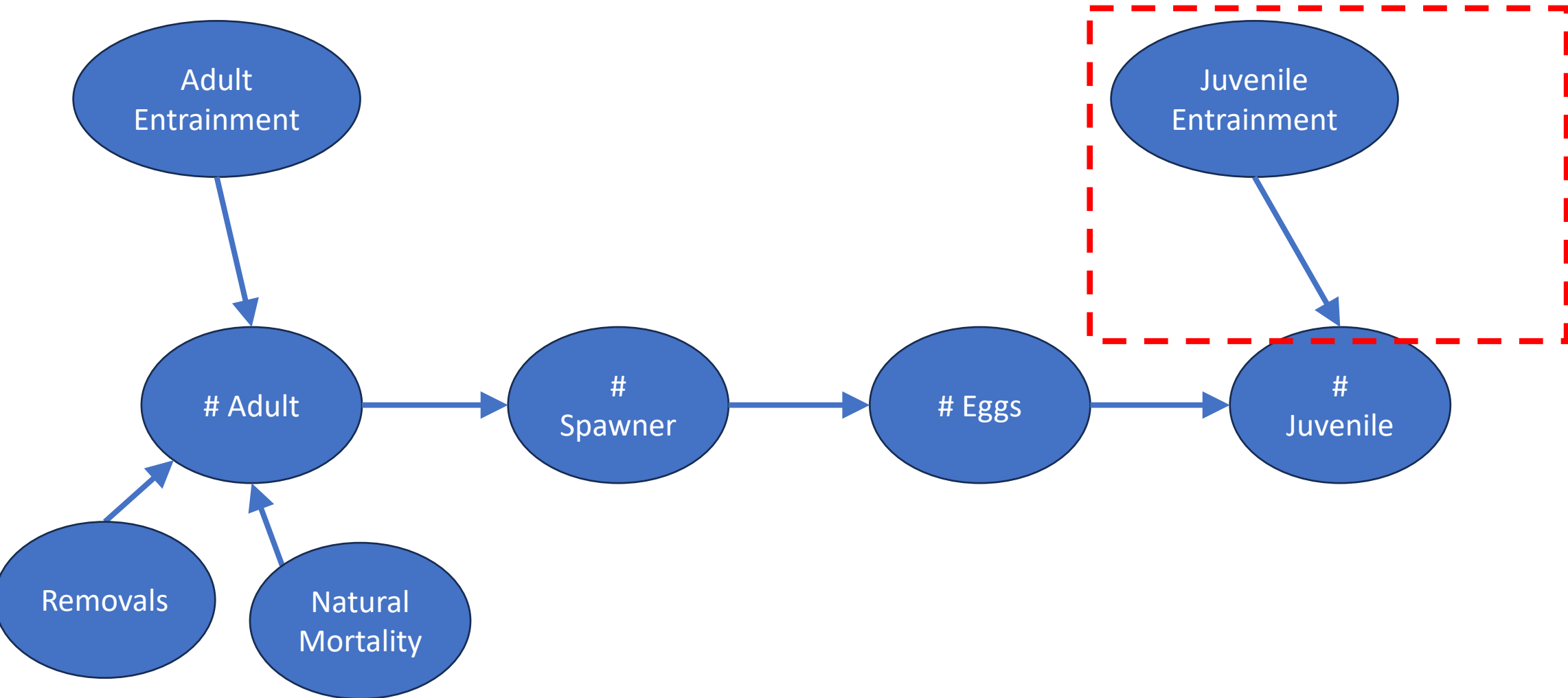


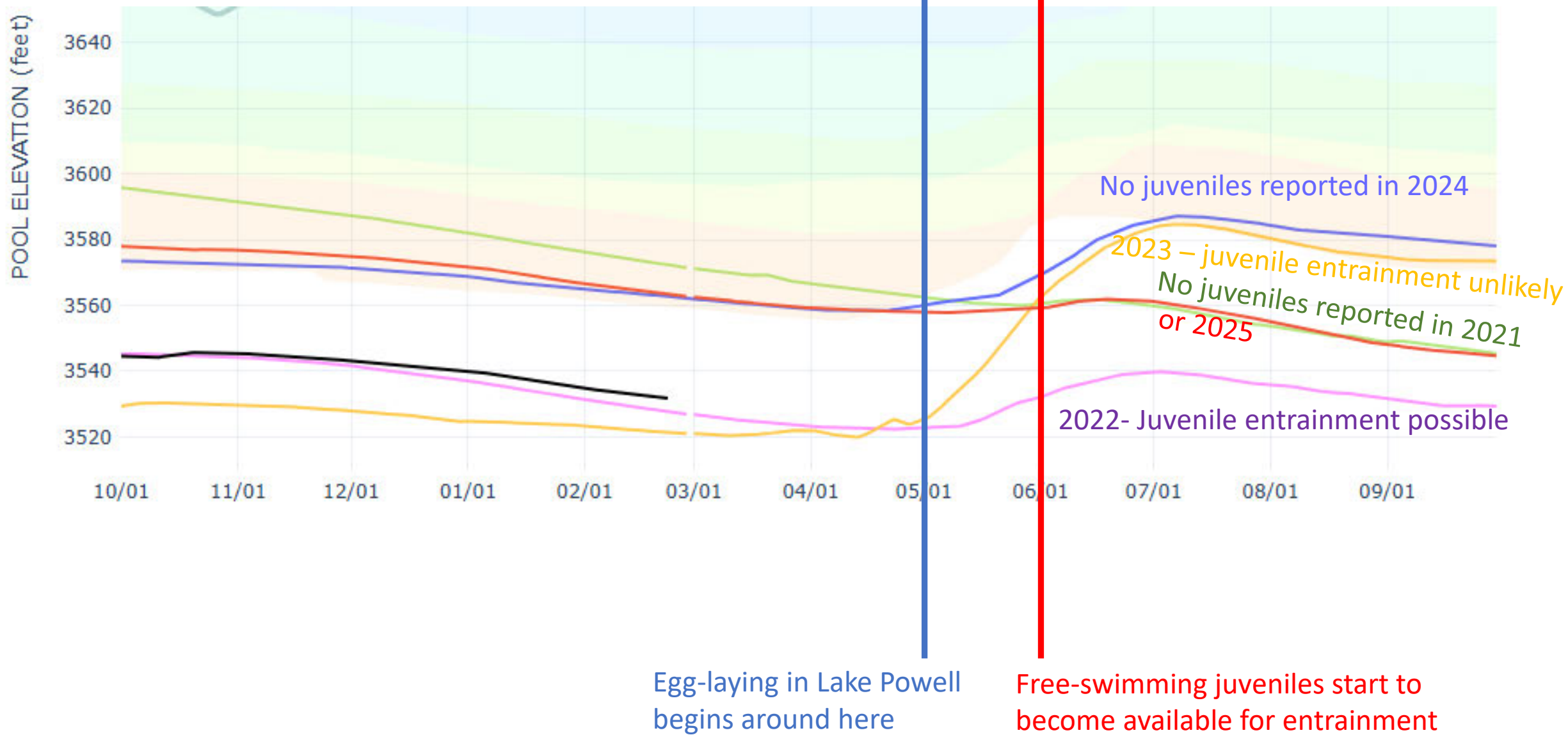
Modest increase in estimates of adult Smallmouth Bass abundance since 2021, but little evidence for substantial increase



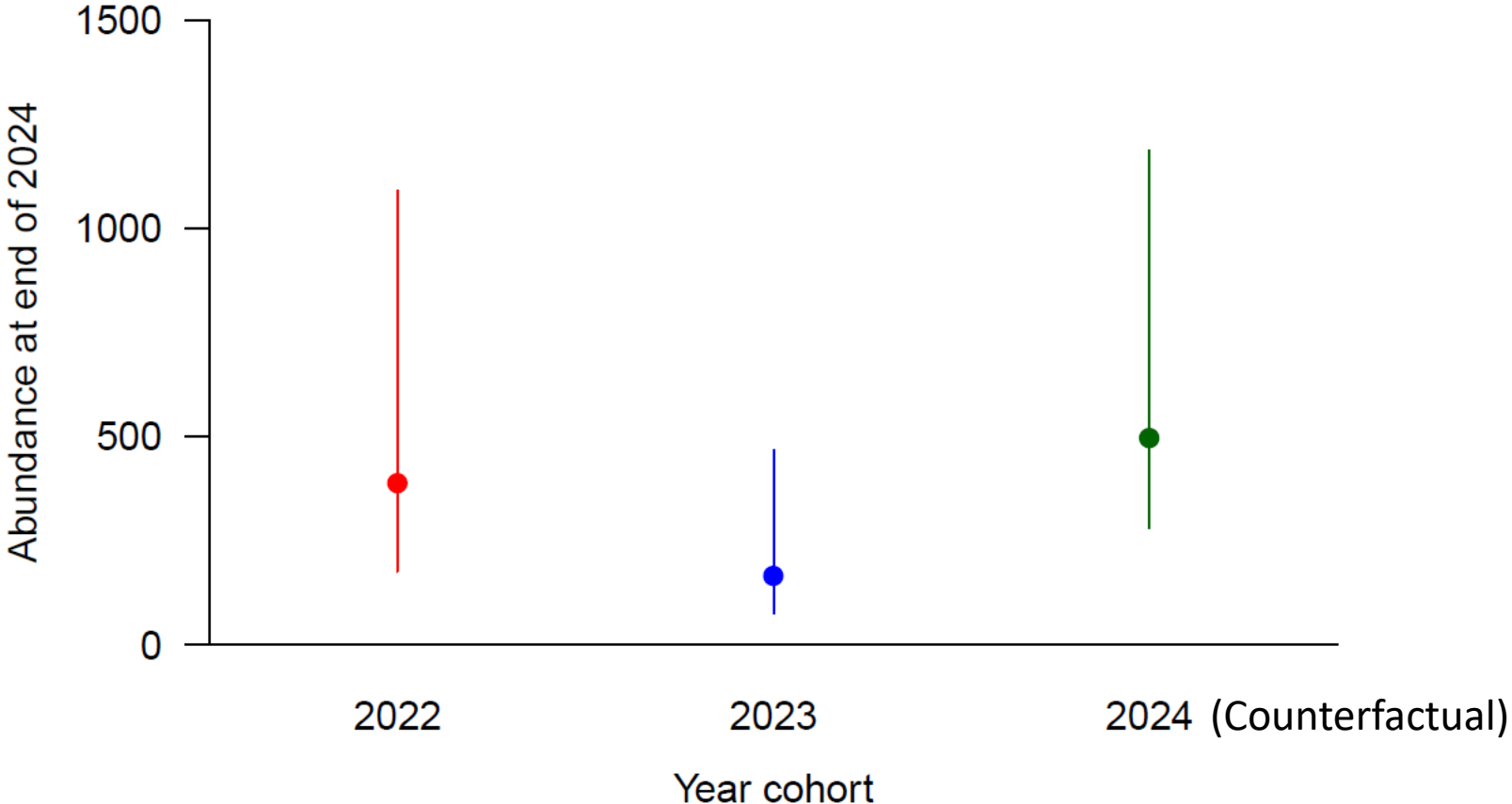
What about juvenile entrainment?

Juveniles are likely concentrated high in the water column and are only available during some months...





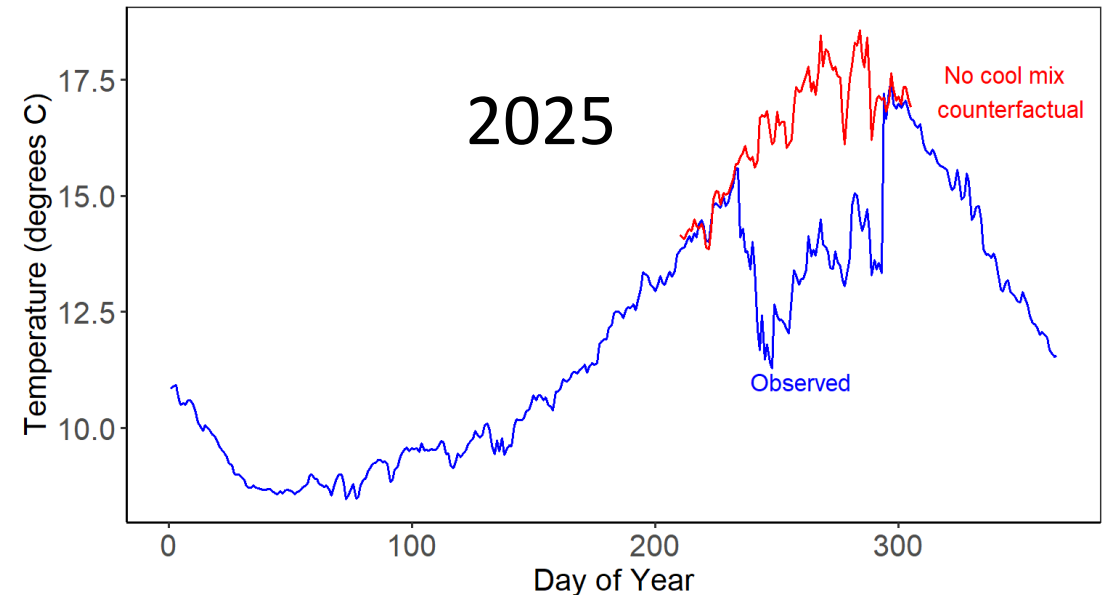
We estimate that not doing cool mix in 2024 would have led to a doubling of smallmouth bass population.



What about 2025 (and other fish species)?

- Smallmouth bass catch was ~82% lower in 2025 as compared to 2024 and no fish caught were expected to be young of year (or 1 year old). Otolith analysis ongoing.
- For 2024, Rainbow trout growth was probably positively impacted by cool mix and Humpback chub growth was probably negatively impacted by cool mix, but population level effects on both species were unlikely.
- Cool mix is leading to substantial within day variation in all aspects of water quality (temperature, dissolved oxygen, phosphorus).

2025 Counterfactual analysis not completed yet.



Acknowledgements

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Interagency Smallmouth Bass Taskforce
Glen Canyon Dam Adaptive Management Program



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