October 16 Advance BB deadline

9/3/24 SRWG Meeting Follow-Up tasks

Re-fit spawner-recruit relationships using outmigration temperature in spring, compounding effects from lower flows (prediction vs mechanistic)

Current indicators: Spawners + Verona Flow during outmigration

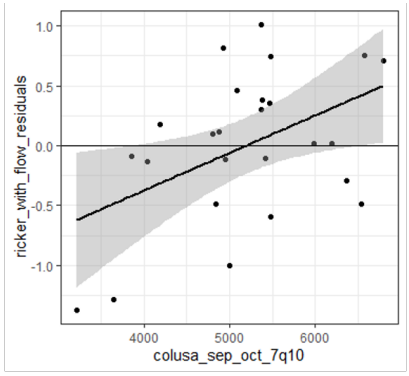
•Check for effects of other gages instead of Verona suggest little improvement with other gages

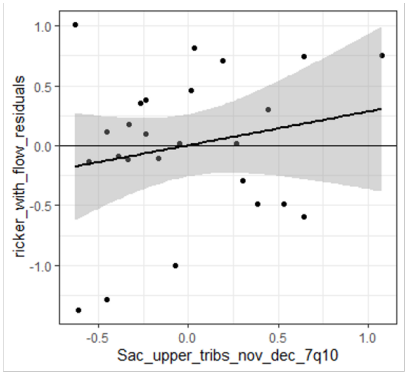
Other possible indicators within spawning – outmigration time frame

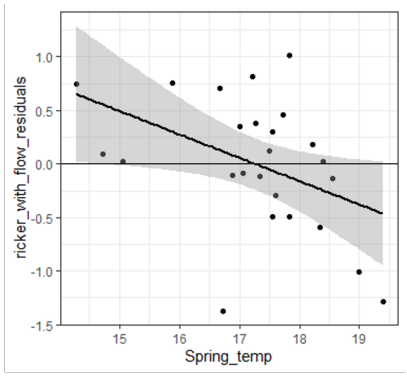
1.Poor conditions for spawners (Fall spawning low flows)

2.Redd dewatering (Winter tributary low flows)

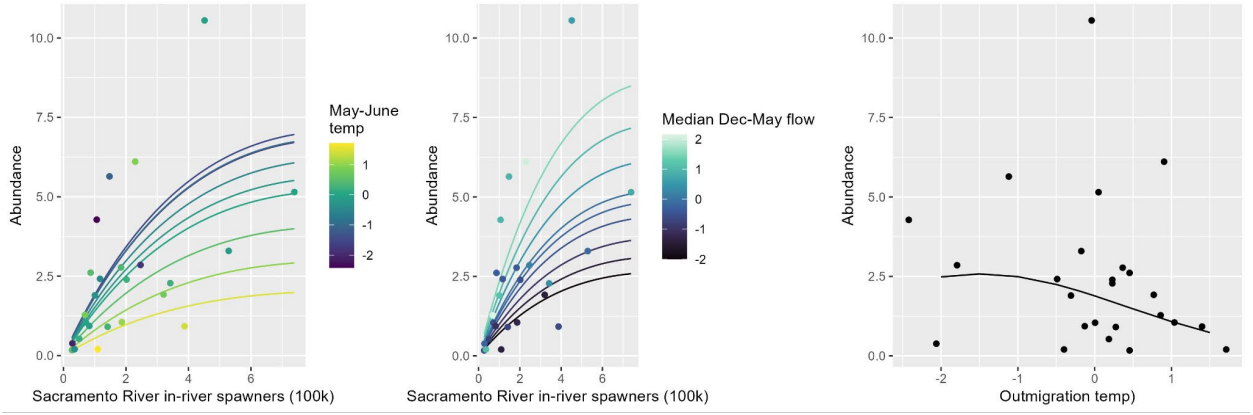
3.Outmigration temperature in Spring







So, maybe model needs more parameters?



Next steps/learn more about: Formal performance metrics to compare model formulations in terms of their performance/explanatory power.
Stu has been doing model comparison, we can look at this in the future writeup.
Definitely covariance among many of these indicators, thus at lifecycle scale there are diminishing returns to adding more covariates, a lot can be explained by just precipitation for the year. Interesting that there is some additive variation explained by both temp and flow.
Fundamental challenge with fall Chinook: If juveniles meet unfavorable conditions, tendency is to migrate away. Thus hard to see how Ricker dynamics (i.e., decline in overall success at high density) would emerge. Even trickier when you think about delayed effects (e.g. *C. shasta*).

Look into use of SacPAS to quantify uncertainty in Upper Sacramento spawner-recruit relationship, but don't overdo work extracting weekly values

-Not easy to get weekly values. Deferred pursuing this further.

Explore use of egg model to develop a metric of hatchery success, that may be continuous rather than discrete success/failure

- Limited time to pursue further before this meeting.

Look into reasoning behind 15-year window in OPI-H forecast development, and whether it can apply here

- Focusing on the amount of data available for hindcasting to use for performance evaluation. I.e. 15 years ago was how far back they could go and still have enough training data to inform first year's hindcasted "prediction" to test. Tradeoff between training and testing dataset size. Was tuned to a forecasting context.
Continue to explore tradeoff, but absent strong reason not to, use all robust data available?

Consider "diminishing returns" approach to identifying a desired level of production

-Proposed addition to Progress Report soliciting advice of SSC&STT:

The SRWG noted this challenge is not unique to SRFC, for example Hasbrouck et al. (2020) showed similar results for six model formulations applied to two time periods for an Alaskan sockeye population. Thus, the SRWG recommends continuing to consider options for identifying an "optimal" level of production, which might be done qualitatively based on a sense of diminishing returns, or more quantitatively using the methodology proposed in Satterthwaite (2023). The SRWG particularly welcomes insight from the SSC into the scientific merits of alternative approaches to this challenge, and from the STT on the precedents for how this challenge has been addressed for other stocks.

Correigh's work on diminishing return points. More worried about risk on low end?

Consider ways to incorporate resilience, viability criteria, and/or performance of individual significant parts of the ESU into conservation objective and/or other management measures

-Proposed addition(s) to Progress Report noting parallels with "de minimis" provisions and soliciting Council guidance:

The SRWG discussed the SSC's recommendation that the long-term goal should be development of natural-origin objectives – for consistency with the theoretical basis of MSY reference points, to reduce the risk of over-harvest of the natural component, and to reduce the risk of ESA listing that could constrain future fishing opportunities. Public comment during the second day of the June SRWG meeting also raised considerations around ensuring adequate escapement to each significant area and life-history within the total Central Valley Fall Chinook stock complex, and raised the question of whether managing for the sustainability and resiliency of each component of the Central Valley Fall Chinook stock complex should be an explicit management goal. The SRWG notes that considerations around natural spawner abundance, genetics, substocks, and co-occurring stocks are explicitly triggered when de minimis provisions come into play at low forecasted abundance (PFMC 2024, p. 32) but not otherwise. To date, no SRFC preseason forecast has been low enough to trigger the de minimis provisions.

The SRWG agrees with the STT and SSC that developing natural-origin objectives could not be accomplished in the short term based on available data, and thus will focus on analyses based on natural-area spawners in the near term. ~~The SRWG did not reach a consensus on whether development of natural-origin objectives should be the long-term goal.~~ The SRWG seeks guidance from the Council on the emphasis to place on the sustainability and resiliency of populations compared to

focusing on harvest metrics, and the extent to which each component of the Central Valley Fall Chinook stock complex should factor into evaluations of overall system performance.

Increasing variability lately, increased frequency of low escapement years and low forecast years later, heightens value of resilience? Climate change perspective? How do we facilitate stock recovering from periods of poor conditions?

Resilience and spatial variation over time important to track in some way, but how it informs management is a struggle. We value this but don't know how to put it into management. Categorically/qualitatively, could it be brought in via risk tables?

In a system where we are putting a lot of pressure on hatchery system, lots of what's out there is hatchery-origin, can have compounding effects if individual hatchery programs aren't performing at same level.

Take careful look at draft risk table and be ready to give feedback at next meeting

-Agenda Item C

Some initial thoughts from Will on "Possible risk table rubric for SRFC" slide:

Be careful not to double-count factors that are explicitly accounted for in potential revised forecast models that might be used in the future, and for now be careful about factors that should be reflected in the jack count, or at least put primary emphasis on factors that would exert their primary effects in ways that last year's jack escapement doesn't capture

Not sure about recent under-prediction being "favorable", also considering recent (abundance) forecast error raises the potential for double-counting with autocorrelated error term, though the error term is not the error in last year's forecast but the error in last year's fit excluding the autocorrelated error term

Is "overfishing" the issue or "overfished"? I.e. too high a fishing rate or (and?) too low a realized spawner escapement? Regardless I would maybe focus more on escapement substantially below Smsy and/or escapement far below the preseason expectation (so forecast+harvest model did poorly).

Next WG update in November, then next one June 2025
Good amount of time to get work done

Jan 15 checkin meeting?
PSC Jan 13-17
STT week of 20th
Good to hear about MR outcome, STT mtg outcome
Don’t want to pussh too late
Longer term thinking about MR for next year
Jan 28th tentative date
Likely last one until we get through salmon process
Have been doing 2 day meetings, can we get down to 1 day?