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Sent: Thursday, June 6, 2019 4:28 PM
To: Howard Brown - NOAA Federal; Garwin Yip - NOAA Federal; Cathy Marcinkevage - NOAA Federal; Barbara Byrne - NOAA Federal
Cc: Naseem Alston - NOAA Federal
Subject: Confirming Shasta Temperature management ITS approach

Hi all,

Short version: Is everyone OK with identifying the take limit for Shasta temperature operations using a similar method to what was taken in '09 (take limited by a TCP set by the SRTTG and incorporated into Reclamation's temperature management plan)?

Long version: I spoke with Naseem about developing take for the PA action components in the Shasta/Sacramento Division and I was planning to start with the temperature management tiers. I think what would work best is to follow a similar approach to the one we used in '09: where we would limit take based on Reclamation's proposed operations and where take would be exceeded if temperatures exceed those identified in Reclamation's plan. The biggest issue I see tying take to Reclamation's annual operations plan is that I think Reclamation would bristle at the idea that deviations from the plan would be take? How is this currently resolved? I know there have been instances where they haven't met temperatures but according to the '09 opinion I think that constitutes take?

I had initially thought to use the Calsim/HEC5Q modeling results to identify, for each tier and species, the "proportion of time above a specific temperature threshold" to be more specific but to not go so far as to identify a temperature dependent mortality or proportion of a population. I found this approach to have some unavoidable "Cons" though.

The Pros:

- It's more specific to our analysis and in some cases could offer Reclamation more flexibility in operations since it's more of a clear "limit".
- The Calsim modeling provided the expected frequency each tier would occur which is a critical component of what overall take is expected.
- We've already presented the Calsim/HEC5Q results in the effects section in the summary tables as a surrogate for proportion of population (rather than the TDM results which incorporate spatial and temporal variability, but only for WR). This means the quantitative "work" is done.
- Using the Calsim/HEC5Q results would allow for a consistent approach across species (rather than mortality results which are specific to WR only).
- Using the CalSim/HEC5Q results avoids some compounding error (and assumptions) of modeling results based on modeling results based on modeling results (Calsim --> HEC5Q --> Martin/Anderson TDM models).
- Reclamation should be 'comfortable' with this approach as they tend to say that the HEC5Q results over-estimate temperature exceedences that would otherwise be avoided through real-time/daily operations (it should be within reclamation's ability to avoid exceeding the take).

Essentially the "Cons" identified below make using the specific Calsim modeling results difficult and they illustrate why a simple approach tied to Reclamation's annual plan is maybe all we can do:

- Using the modeling results is problematic in Tiers 2, 3, and 4 because modeling does not capture the PA approach (but we didn't analyze it either). Modeling assumes Reclamation will try and meet a temperature target of 53.5 at CCR for as long as possible, while the PA is more dynamic. Also in tiers 3 and 4 there is no expectation of even meeting 53.5, so take based on how often 53.5 is exceeded is a set up for failure.
 - This issue was resolved in '09 by having take limited by the TCP which is established by the SRTTG (temp and location). We could do this again relying on operations described in Reclamation's temperature management plan but that will only include *information* from the SRTTG and it remains Reclamation's discretion?
 - In '09 we also identified not meeting the performance metrics as exceeding take. Should we do this again? As we develop the performance metrics there's been a lot of discussion of "charting an independent panel", so I'm not sure how that would "fit" with the performance metrics being used as a take limit? Maybe the performance metrics could be used if take were described as exceeded when "operations were found to be inconsistent with the performance metrics" which may be a question for the independent panel?

Could there be a combo-approach where the take limit is set based on 1) the frequency of tiers described in the modeling, and 2) Reclamation's summer temperature management plan, and 3) some form of "consistency" language related to the performance metrics?

Any thoughts or concerns? Were we litigated on the '09 approach that I'm proposing in part to emulate?

Thanks,

Evan

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