**From:** Evan Sawyer - NOAA Federal <evan.sawyer@noaa.gov>
**Sent:** Monday, March 11, 2019 11:48 AM
**To:** Cathy Marcinkevage - NOAA Federal
**Cc:** Sarah Gallagher - NOAA Federal; Barbara Byrne - NOAA Federal; Garwin Yip - NOAA Federal
**Subject:** Re: Upper Sac Science Support

Hey Cathy,

Sarah and I spoke and below are our thoughts:

On Sat, Mar 9, 2019 at 11:29 PM Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov> wrote:

> Sarah and Evan --
>
> Please see below for some clarification needs and follow-up. I gave a heads up to Eric last week but if we can hone in on these soon, it would be good to provide the center with a refined request on these. Snag me to discuss or let me know what you think on Monday.
>
> - A historical summary of raft and mortality model from previous years' redd data, and comparison to PA. **I'm not clear on this request. Tell me if this is off: Apply RAFT and mortality model to historical redd data, and provide the resulting temperature related mortality (or, as an alternative, survival) for that period (as an average over the period? Or average for each water year type?), and provide similar analyses/results for those models applied to the PA. If this is correct, I'm concerned that the first part is pretty time intensive.**

For this ask, we're trying to ascertain exposure. For the average distribution of redds, what proportion would be exposed to temperatures in excess of 53.5 for each the PA and the COS. The next step would be to look at temperature dependent mortality.

> - Compare mortality modeling results **between** Martin and Anderson to **identify what causes** mortality differences to occur, and compare **model** results **between** PA and COS **to identify what in PA may be causing the changes.**

I think this is more a question of understanding the difference between the PA and the COS. Specifically understand what causes the temperature dependent mortality improvements in the PA relative to the COS (found in both the Martin and Anderson models). Is it timing (start of temperature management?), is it location (a change in temperature compliance point?) is it initial storage (higher May 1 storage, allowing access to upper gates, caused by some other factor/op.?)?

> - Does the science center have ability to provide analysis of winter run juvenile habitat changes after fall and winter flow decreases and stranding effects to juveniles in the upper river? **This may be something that the life cycle model can do, but we may need to specify the metric -- it may be that they can attribute a change in survival rates to changes in habitat.**

Not much to clarify, just interested in knowing if the Science center or any of their tools can assess the changes in habitat availability/quality related to flow changes?

- Derek Hilts mentioned that he could plot historical accretion/depletion to help us understand trends. Is this something science center has looked at? **I doubt it. I'll ask, but I suggest putting it in Derek's queue with a note that we'll confirm the request soon. You can go ahead and do that.**

Derek is doing this so remove from the request to the Science Center.

Thanks!
Cathy

On Wed, Mar 6, 2019 at 11:51 AM Sarah Gallagher - NOAA Federal <sarah.gallagher@noaa.gov> wrote:

Here are some suggested needs and would appreciate any feedback. I don't want them to do extra work (or not get us what we need).

- A historical summary of raft and mortality model from previous years' redd data, and comparison to PA.
- Compare mortality modeling results (comparing Martin and Anderson) to see where mortality differences occur, and compare resutls to PA and COS .
- Does the science center have ability to provide analysis of winter run juvenile habitat changes after fall and winter flow decreases and stranding effects to juveniles in the upper river?
- Derek Hilts mentioned that he could plot historical accretion/depletion to help us understand trends. Is this something science center has looked at?

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On Tue, Mar 5, 2019 at 8:22 AM Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov> wrote:

All --

Critical path is getting the Science Center our needs for the Upper Sac so that they can do any analyses in time.

Please reply by **Noon on Wednesday.**

I think we have to simply do this by email -- I'll pull together conversations as needed after seeing your responses.

Indicate what questions you would like the center to attempt to answer given that they have capabilities to 1) analyze temperature data used in the BA, 2) analyze the mortality modeling results (from two methods) used in the BA, 3) run the CV TEMP model, 4) run the martin mortality model based on CV Temp results, and 5) probably other things.

I feel like these needs are floating in your heads. I wouldn't expect this to take more than 60-90 min, so please let me know if it is taking you longer than that.

Thanks --

Cathy

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