From: Miles Daniels - NOAA Affiliate <miles.daniels@noaa.gov>
Sent: Wednesday, March 20, 2019 3:35 PM
To: Eric Danner - NOAA Federal
Subject: ROC_AR_Releasable (Summary days redds above 53.5 F)

Hi Eric,

Attached is the requested table (excel format) summarizing the days redds are simulated to be exposed to water temperatures above 53.5 F in the PA and COS scenarios. The table also has information such as the Shasta storage as of April 31st and the temperature tier associated with that storage. Mean mortality estimates for the Martin and Anderson mortality models are also included.

Note that to calculate the days redds were exposed to temperatures above 53.5 F on an annual basis, a weighting approach was used with the information provided in Appendix D page 85 of the BA (tables and pages are not numbered in the actual document). Specifically the two tables providing the temporal and spatial distributions of redds were used for weights. Please let me know if you would like more details on this.

Also note that in Appendix A, the Shasta temperature tiers are described in terms of cold water pool, which appear to be translated to total Shasta storage via the "rule of thumb relationship" presented on page A-45. However, our previous efforts to re-create the rule of thumb relationship were unsuccessful and therefore it is difficult to confirm that the relationship is valid. See the email titled "ROC_AR_Releasable (CCR and Shasta/Keswick Temperature Relationships)" for more details on this subject.

Lastly, there are two plots attached which summarize the attached data. One plot summarizes the data by Shasta temperature tier and the other by water year type.

Some general trends seen in the plots:

1) When considering the hatch (Anderson) or emergence (Martin) model, the PA often has redds exposed to fewer days above 53.5 F, however, not during wet and above normal water year types.
2) As expected, the hatch model has redds exposed to fewer days above 53.5 F compared to the emergence model regardless of scenario as the time frame the two models considers is different.

Please let me know if there are any questions,
Miles

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