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**From:** Miles Daniels - NOAA Affiliate <miles.daniels@noaa.gov>  
**Sent:** Tuesday, March 19, 2019 10:31 AM  
**To:** Eric Danner - NOAA Federal  
**Subject:** Re: Seasonal habitat capacity

I just did a quick check and I get the same results. Plot attached just showing summer days capacity on X-axis for upper plot, flow on middle plot, and the boxplot on the lower. When looking only at the summer days time series, we can see there are a few times where capacity in the COS is greater than the PA, which correspond to some more flow in the Yolo. The majority of the time (96%) the capacity across the two scenarios are identical. There are very few times where there is more capacity in the PA compared to the COS so I think the negative trend is real, but it is a small fraction of the total time.

-Miles

On Tue, Mar 19, 2019 at 9:52 AM Eric Danner - NOAA Federal <[eric.danner@noaa.gov](mailto:eric.danner@noaa.gov)> wrote:  
Sorry, it was in an earlier email in the chain. This one - the dozen or so values favoring COS in summer.

On Tue, Mar 19, 2019 at 9:41 AM Miles Daniels - NOAA Affiliate <[miles.daniels@noaa.gov](mailto:miles.daniels@noaa.gov)> wrote:  
Hi Eric,

Is Evan wondering why there is a negative trend in capacity in the summer for the Yolo when you do PA-COS? If you share the plot, I might be able to get a better sense of his question.

Overall, as shown in the attached flow plot for Yolo, there is little difference between the scenarios and so they should have very similar capacity estimates.

-Miles

On Tue, Mar 19, 2019 at 9:31 AM Eric Danner - NOAA Federal <[eric.danner@noaa.gov](mailto:eric.danner@noaa.gov)> wrote:  
Miles - any idea what is happening in the Yolo in summer? Not worth spending any time on this, but if there is a simple explanation...

----- Forwarded message -----

From: **Evan Sawyer - NOAA Federal** <[evan.sawyer@noaa.gov](mailto:evan.sawyer@noaa.gov)>  
Date: Mon, Mar 18, 2019 at 9:43 PM  
Subject: Re: Seasonal habitat capacity  
To: Eric Danner - NOAA Federal <[eric.danner@noaa.gov](mailto:eric.danner@noaa.gov)>  
Cc: Cathy Marcinkevage - NOAA Federal <[cathy.marcinkevage@noaa.gov](mailto:cathy.marcinkevage@noaa.gov)>

Hey Eric,

Here is the short description of the modeling results you shared. I felt like I had a better understanding of it when we talked so this description seems a little off? Can you take a look and provide any feedback?

Figures 1-X describe the difference in habitat capacity modeled by the WRLCM, between the COS and the PA by season (or WYT) for the Upper Sacramento River (Keswick Dam to ...), Lower Sacramento River (...)

to the Fremont Wier (?)), and the Yolo Bypass. Overall there is no trend and little difference in the average habitat capacity between the COS and the PA. Furthermore, since the model results are clustered around zero, those instances where there is a difference between the COS and the PA do not carry through in way that would effect the species (e.g. affecting the cohort replacement rate).

Also I must not be understanding it correctly because I can't really explain what's going on in the Yolo in the "Summer?" It looks to me like there should be some kind of negative trend but the average is still at zero? Is this zero-inflated? Is there a way (or a reason?) to look at this differently? Does a log scale make sense, or is there a way that corrects for (what I think are) so many zeros?

Thanks,  
Evan

On Mon, Mar 18, 2019 at 3:13 PM Evan Sawyer - NOAA Federal <[evan.sawyer@noaa.gov](mailto:evan.sawyer@noaa.gov)> wrote:  
Hey Eric,

Thanks, for this. I have some questions. Can I give you a call either today after 3:30 or tomorrow?

basically: is the red line on zero the average difference between COS and PA? Or is there an average difference, like average PA habitat capacity in "fall" is XX millions of fish more than the COS?

Thanks,  
Evan

On Mon, Mar 18, 2019 at 3:05 PM Eric Danner - NOAA Federal <[eric.danner@noaa.gov](mailto:eric.danner@noaa.gov)> wrote:  
Here is another one by WYT.

Eric

On Fri, Mar 15, 2019 at 9:43 AM Evan Sawyer - NOAA Federal <[evan.sawyer@noaa.gov](mailto:evan.sawyer@noaa.gov)> wrote:  
Hey Eric,

Thanks for the information yesterday. Can you provide a comparison of habitat capacity (from the WRLCM) between the PA and COS for the following "seasons":

Winter (Dec 1 - March 1)

Spring (March 1 - May 15 [maybe needs to be June 1? or May 1?])

Summer [temp mgmt.] (May 15 [or June 1] - Nov 1)

Fall (Oct. 1 - Dec 1) <-- I realize there's overlap with Fall.

These "seasons" generally correspond to the timing of Reclamation's operational decisions, so it may be a way to describe any differences in the operations (PA to COS). If there's no difference that's useful information too.

Thanks,  
Evan

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