

**Stephen Maurano - NOAA Federal**

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**From:** Stephen Maurano - NOAA Federal  
**Sent:** Friday, May 3, 2019 11:53 AM  
**To:** Brian Ellrott  
**Cc:** Cathy Marcinkevage - NOAA Federal  
**Subject:** Re: American River Temperature Data Help

Hi Brian,

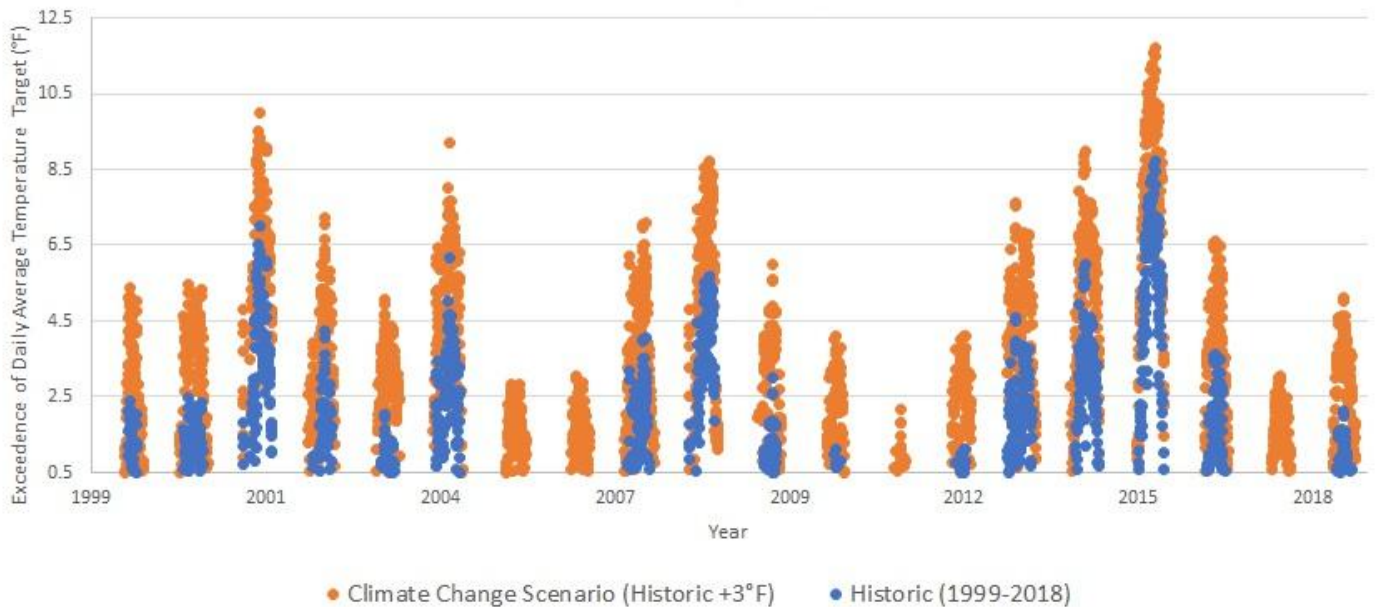
I played around with the data this morning and have a few questions and suggestions:

1. What magnitude is required to consider it an exceedence? Is 0.01°F sufficient, or does it need to be more, e.g. 0.5°F? (I'd suggest the latter)
2. What duration? The RPA seems to read like a single day above the 65°F target is an exceedence. There are also triggers for notifications and management actions (3 days >65°F or 1 day > 68°F) but those seem independently applicable. However, SacPass doesn't interpret it as exceedence until it the notification / management actions are triggered. (I'd suggest the former)
3. What potential climate change effect do you want to consider (+1°F and/or 3°F)? Back of the envelope: +3°F = +1.6°C, the anticipated (air) temperature increase in ~25 years per [this USBR report](#). The results will be really sensitive to this assumption, roughly doubling the number of excrescences, see preliminary table and chart at the bottom based on the CDEC data.

Days Suitable for Over-Summer Rearing			
Year	Historical	Climate Change	Difference
1999	76%	34%	-43%
2000	51%	9%	-42%
2001	29%	21%	-8%
2002	55%	14%	-41%
2003	64%	25%	-39%
2004	24%	5%	-19%
2005	100%	29%	-71%
2006	99%	36%	-63%
2007	45%	1%	-44%
2008	35%	8%	-27%
2009	65%	35%	-30%
2010	89%	39%	-49%
2011	100%	69%	-31%
2012	80%	38%	-42%
2013	28%	2%	-25%
2014	24%	5%	-19%
2015	18%	4%	-14%
2016	48%	25%	-24%
2017	99%	34%	-65%
2018	57%	23%	-34%
<b>Total</b>	<b>59%</b>	<b>23%</b>	<b>-36%</b>

\*Percent of Days Supporting Suitable Temperatures (<65 F) For Over-Summer Rearing (May 15 - Oct 31) of Juvenile Steelhead in the Lower American River (Watt Ave Bridge) with Climate Change Scenario +3°F.

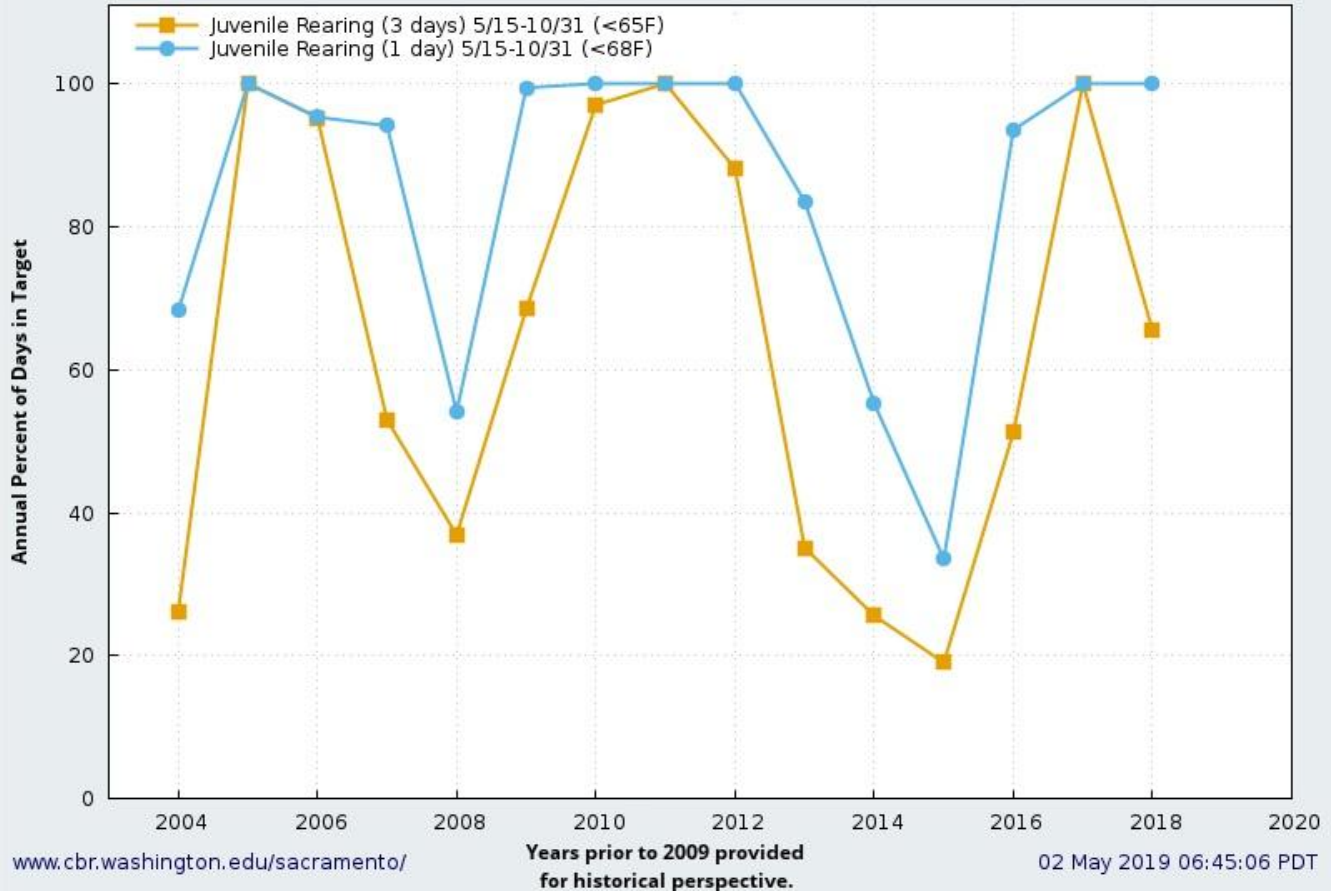
## Lower American River Temperature Exceedences for Juvenile Steelhead Over-Summer Rearing under Historic vs Climate Change Scenario



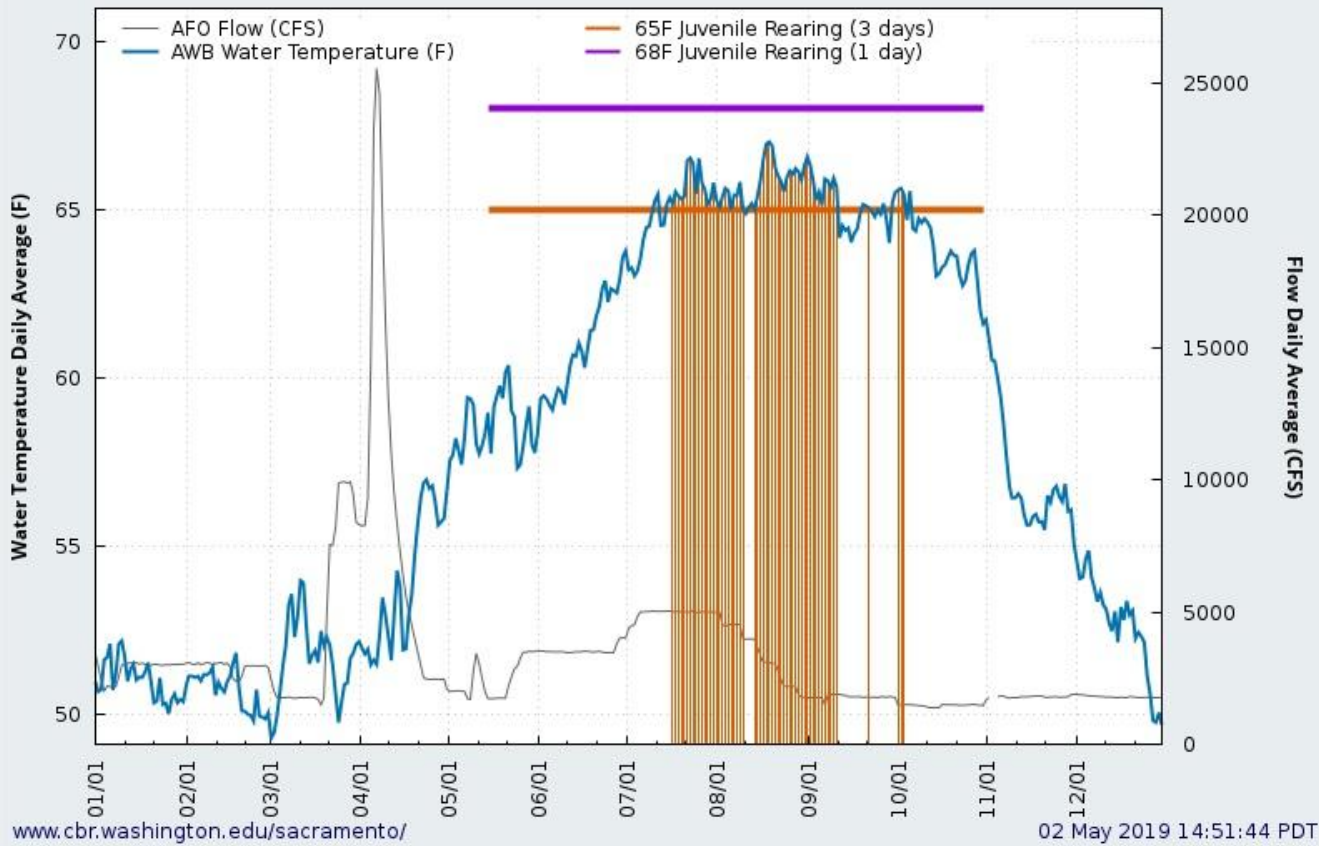
On Thu, May 2, 2019 at 3:37 PM Stephen Maurano - NOAA Federal <[stephen.maurano@noaa.gov](mailto:stephen.maurano@noaa.gov)> wrote:

Hi Brian, I Googled around a bit, and think that perhaps [SacPass does a pretty good job analyzing and visualizing the RPA](#) (examples below). It doesn't include some of the QA/QC that Excel sheet did, nor the 1-3 degree climate change addition, and with either analysis it's difficult to incorporate the potential exceptions (e.g. when there's limited cold water availability in Folsom they can increase the target within limitations) but I think it might answer the questions Cathy mentioned, and it has figures and tables that can be directly used, or re-displayed if desired. Just let me know how you'd like to proceed and happy to assist wherever I can...

### Annual Lower American Temperature Target Analysis based on RPA II.2 2004-2019 American R below Watt Ave Bridge (AWB)



**2018 Lower American Temperature Target Analysis based on RPA II.2  
American R below Watt Ave Bridge (AWB) Water Temperature  
with American R at Fair Oaks (AFO) Flow**



On Thu, May 2, 2019 at 2:07 PM Cathy Marcinkevage - NOAA Federal <[cathy.marcinkevage@noaa.gov](mailto:cathy.marcinkevage@noaa.gov)> wrote:  
Stephen, Brian --

Brian, Stephen is able to help with temperature data crunching and visualization. Can you give him access to the table you created and also connect? And consider some of the options he introduces below!

Stephen, yes, my S drive is your R...sorry about that. It is whatever you have the CVP ROCON drive mapped to. Dive in!

Let me know if you need anything!

Cathy

**Cathy Marcinkevage**  
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On May 2, 2019, at 1:57 PM, Stephen Maurano - NOAA Federal <[stephen.maurano@noaa.gov](mailto:stephen.maurano@noaa.gov)> wrote:

Sure, happy to help. Can you just put me in contact with Brian to get more details and a deadline to complete? I can't access that data you linked, but I'll ask Shawn to map the drive and then look at it.

I have no problem contributing with Excel, GIS, R, etc -- like you said, it's a good way to dip into items. Since I don't have a lot of background, my hope is just that the more experienced folks make sure I didn't misrepresent anything

:-)

Just food for thought: I was analyzing some continuous temperature data last year in the San Joaquin and the Delta from CDEC & CDFW (from SJRRP) comparing against salmon 7DADMs (e.g. for migration <18C, spawning <13C, rearing <16C, etc). The data in orange exceeds the threshold while blue is below the threshold (versus gray, which is outside the migration, spawning, or rearing periods). Heat maps are also a good visualization, like the Ben Martin examples at the bottom...

<image.png>

<image.png> <image.png>

On Thu, May 2, 2019 at 12:10 PM Cathy Marcinkevage - NOAA Federal <[cathy.marcinkevage@noaa.gov](mailto:cathy.marcinkevage@noaa.gov)> wrote:  
Stephen --

Brian and Joe have identified a need for some help in data visualization and analysis to support work they have done for the effects analysis for the ROC LTO for the American River.

Ultimately, they are looking for a good way to show how well the 65 F and 68 F daily average temperature (DAT) targets are achieved...or not.

We have some figures from Reclamation that show historical data; that is attached, and the data behind it are on the server at

S:\Data\_Tech\_Info\Historical\AmericanRiverTemData

Brian was also considering a table, something like the incomplete example in this google sheet (though he's not tied to this), to help show the ability or not to meet that temperature.

<https://docs.google.com/spreadsheets/d/1ktGwgPLOTlhTvtYvCJom5n4EKhZdBzD3H-Z4icf2SM/edit?usp=sharing>

Can I throw you on this to work with Brian to help address this? He did suggest starting with the most recent years first as the last 10 years is likely a better representation of what is to come than what happened from say 2000 to 2009.

And, so you know, I don't see "figure making" as a primary go-to item for you to do long-term. I think this is a good way to dip in and we definitely can use the help in contributing, and you've shown to have a good eye for displaying info, which is critically important in this arena! But don't be worried that you're getting pegged for that role forever!

Let me know what you think --

Thanks!  
Cathy

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