

**From:** Evan Sawyer - NOAA Federal <evan.sawyer@noaa.gov>  
**Sent:** Wednesday, May 15, 2019 12:05 PM  
**To:** Brian Ellrott - NOAA Federal  
**Subject:** Re: ROC LTO - winter-run I&S help

Hey Brian,

A little unsure of the question but the table below is most up to date. The range in 'risk' is the based on the last 20 years of actual Shasta May 1 storage vs the CalSim II predicted tier. Then the TDM results have been updated as well.

Tier	Life-stage	Exposure	Risk	Stressor	Response
1	Adult (holding), Egg/Fry	23.3% of days (Medium)	45-68% of years	Water Temperature	<ul style="list-style-type: none"> <li>• Reduced reproductive success</li> <li>• Reduced survival probability (mean temperature dependent mortality of 5 percent (Anderson) and 6 percent (Martin); widest range of 25 and 75 percentiles for 2 different models is 0 to 6 percent)</li> </ul>
2	Egg/Fry	33.1% of days (Medium)	17-35% of years	Water Temperature	<ul style="list-style-type: none"> <li>• Reduced survival probability (increase in mean temperature dependent mortality of 12 percent (Anderson) and 15 percent (Martin); widest range of 25 and 75 percentiles for 2 different models is 2 to 26 percent )</li> </ul>
3	Egg/Fry	65% of days (Medium)	7-15% of years	Water Temperature	<ul style="list-style-type: none"> <li>• Reduced survival probability (increase in mean temperature dependent mortality of 28 percent (Anderson) and 34 percent (Martin); ); widest range of 25 and 75 percentiles for 2 different models is 7 to 59 percent )</li> </ul>
4	Egg/Fry	65% of days (Medium)	5-7% of years	Water Temperature	<ul style="list-style-type: none"> <li>• Reduced survival probability (increase in mean temperature dependent mortality of 79 percent (Anderson) and 81 percent (Martin); ); widest range of 25 and</li> </ul>

75 percentiles for 2 different models is 70 to 93 percent )

- The above does not consider any effects (positive or negative) associated with the intervention measures

On Wed,  
May 15,  
2019 at  
11:55 AM  
Brian Ellrott

- NOAA Federal <[brian.ellrott@noaa.gov](mailto:brian.ellrott@noaa.gov)> wrote:

Can you help with Garwin's comments below? Similar to Garwin's second comment, Maria noted that there are updated ranges for the percent of years associated with each tier. I saw updated ranges wrt Shasta being >4.1 MAF (tier 1) in the Effects section, but not for the other tiers and thought you could find the numbers (mortality ranges and percent of years ranges) together quicker than I.

Specifically, under the PA, exposure to water temperatures that are lethal to winter-run Chinook salmon are expected to result in 6 to 9 [\[GMY1\]](#) percent mortality for 68 percent of years [\[GMY2\]](#) (Tier 1), 15 to 29 percent mortality for 17 percent of years (Tier 2), 34 to 63 percent mortality for 7 percent of years (Tier 3), and 81 to 88 percent mortality for 7 percent of years (Tier 4).

[\[GMY1\]](#)6% is based on Anderson model, and 9% is based on Martin model. The range of mortalities within each model is higher.

[\[GMY2\]](#)Derek did a comparison of tiers based on historical Shasta storages and came up with different spreads, depending on the range of years used, but Tier 1 is lower % and Tiers 2 and 3 are higher, so higher likelihood of higher mortality.

--

**Brian Ellrott**

*Central Valley Salmonid Recovery Coordinator*

*NOAA Fisheries West Coast Region*

*U.S. Department of Commerce*

Mobile: 916-955-7628

Office: 916-930-3612

[brian.ellrott@noaa.gov](mailto:brian.ellrott@noaa.gov)

--

**Evan Bing Sawyer,**

*Natural Resource Management Specialist*

*NOAA Fisheries West Coast Region*

*U.S. Department of Commerce*

Office: (916) 930-3656

[Evan.Sawyer@noaa.gov](mailto:Evan.Sawyer@noaa.gov)

[www.westcoast.fisheries.noaa.gov](http://www.westcoast.fisheries.noaa.gov)

