From: Brycen Swart - NOAA Federal <brycen.swart@noaa.gov>
Sent: Thursday, April 27, 2017 11:56 AM
To: Eric Danner - NOAA Federal
Cc: Garwin Yip
Subject: Re: Upper Sacramento River temperature & biological models meeting - Red Bluff rotary screw trap report

Sounds like Sheila needs to coordinate with Dave Vogel. FYI - Here's the response I gave from the first workshop:

The juvenile monitoring at Red Bluff has been ongoing for over 20 years and is considered by the fishery agencies to be the best available scientific information regarding the abundance of winter-run Chinook salmon in the upper Sacramento River. Over the years, the program has been reviewed by multiple statisticians as well as many fish biologists experienced in fish biology and the program has been adjusted as a result of those reviews (*e.g.,* McDonald and Howlin 2000, Skalski 2000, etc.).

Even though RBDD fish traps may not be in operation due to increased river flows, heavy debris loads, safety, or take issues, they are randomly sub-sampled during portions of storm events (day/night) to capture the general magnitude of fish passage. The result balances estimating fish passage while minimizing damage to equipment and maximizing crew safety when attempting to sample throughout storm events that can (and do) easily overwhelm traps.

Lack of sampling all days within a week can result in negative or positive bias, depending on sample effort before and after elevated fish passage events. For example, if sample days are missed prior to a storm/runoff event, and sampling resumes following the event and observes elevated fish passage, you will incorporate positive bias in your data set if you insert interpolated values on missed days earlier in the week based solely on your after-event elevated observations. The opposite can be true when missed days occur following elevated passage events.

Missed sampling days occur in most years during the winter-run emigration period. Since this is after the fry emergency period, we do not expect these events to impact egg-to-fry survival rates in any single year, and thus do not impact our comparison of egg-to-fry survival rates across multiple years.

McDonald, L.L. and S. Howlin. 2000. Review of quantitative procedures used for estimating abundance of juvenile Chinook salmon passing the Red Bluff Diversion Dam, Sacramento River. Western EcoSystems Technology. Cheyenne, WY. April 28, 2000.

Skalski, J.R. 2000. Technical review of quantitative procedures used for estimating abundance of juvenile Chinook salmon passing the Red Bluff Diversion Dam, Sacramento River. University of Washington. Seattle, WA. March 15, 2000.

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On Thu, Apr 27, 2017 at 11:21 AM, Eric Danner - NOAA Federal <eric.danner@noaa.gov> wrote:

FYI

---------- Forwarded message ----------
From: **Sheila Greene** <sgreene@westlandswater.org>
Date: Thu, Apr 27, 2017 at 11:14 AM
Subject: Upper Sacramento River temperature & biological models meeting - Red Bluff rotary screw trap report
To: benjamin.martin@noaa.gov, eric.danner@noaa.gov, miles.daniels@noaa.gov
Cc: Hanson Chuck <chanson@hansonenv.com>, Azhderian Ara <ara.azhderian@sldmwa.org>

Hi again all,

At the Tuesday meeting I mentioned something about the Red Bluff rotary screw that is an issue. Under several conditions the screw traps are raised for sometimes long periods of time. Most of those conditions are when lots of fish are passing. They raise them when the river flow is too high because debris in the water may damage the traps; they raise them when they make a large hatchery release because they don't want to catch all those fish; they raise them and subsample if they are approaching a take level. Under all of these conditions an increased number of fish are expected to pass the traps when they are raised. USFWS interpolates values for those non-sampled says by averaging before and after raising the traps and interpolating. I am attaching the report for your reference. This method ends up underestimating the passage.

From page 4 of the attached report: "When days

or weeks were unable to be sampled, mean daily passage estimates were imputed for

missed days based on weekly or monthly mean daily estimates (i.e., interpolated)."

Sheila Greene

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