
From: Joe Heublein - NOAA Federal <joe.heublein@noaa.gov>
Sent: Tuesday, April 23, 2019 9:10 AM
To: Cathy Marcinkevage - NOAA Federal
Cc: Page Vick - NOAA Affiliate
Subject: Re: Sturgeon Pulses in Upper Sac

Poytress et al. primarily study eggs and larvae, and more recently juveniles but the spawning migration occurs well before eggs or larvae are collected. Green sturgeon can initiate their spawning migration from the Pacific Ocean probably as early as Jan/Feb. This is from the Recovery Plan-

Adult sDPS enter San Francisco Bay in late winter through early spring and spawn in the Sacramento River primarily from April through early July, with peaks of activity likely influenced by factors including water flow and temperature (Heublein et al. 2009; Poytress et al. 2011, 2015)

White sturgeon recruitment is closely related to wet years in the Sacramento basin, and I believe wet years influence green sturgeon recruitment as well. I think one mechanism for this flow/recruitment relationship is some sturgeon of both species 'skip spawn' if there aren't appropriate Bay/Delta outflow conditions during winter/early spring. I've been meaning to look into this concept in pelagic broadcast spawning fish, but basically my theory is recruitment in SFE sturgeon is limited by density of spawning fish, and there is high spawning density in wet years.

Long story short, muted flows from Dec-Feb could impact spawning migration cues for adult green sturgeon but I'm not sure what percentage reduction in Delta outflow would result in a negative impact. Green sturgeon also over-summer in spawning habitats with the first high flows (sometimes in December) triggering outmigration. This is probably less of an issue, but if flows remain critically low through the winter adult green sturgeon could be 'stranded' in spawning habitat. This happened in the Feather River last year with green sturgeon only just outmigrating a couple weeks ago after 1 year+ in the Feather River.

Hope this helps

Joe

On Mon, Apr 22, 2019 at 10:57 PM Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov> wrote:

Hey Sturgeon friends --

The ROC includes a description of winter/early spring ops from Keswick/Shasta. This is specific to the Dec-Feb time frame. We have the following and since Maria questioned it I want to be totally sure it is accurate ;>
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"Green sturgeon life history timing is such that it is unlikely that green sturgeon will be present in the upper Sacramento River in the December-February period when Reclamation is managing winter – spring minimum flows. Adult green sturgeon migrate up river in March to early April, and spawn from April through July with the median spawning May (Poytress et al., 2015), so they are not expected to be affected by this component of the operation."

Basically, consider that Rec operations of Shasta are muting the natural hydrograph of spring flows (Dec-Feb). Is it correct to state that green sturgeon suffer no ill effects as a result of that muting of potential natural peaks in that time frame?

Thanks!
Cathy

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