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**From:** Brian Ellrott - NOAA Federal <brian.ellrott@noaa.gov>  
**Sent:** Tuesday, April 16, 2019 11:19 AM  
**To:** Joe Heublein - NOAA Federal; Rosalie del Rosario - NOAA Federal  
**Subject:** Re: recovery in integration and synthesis

Hi guys,  
Same here in terms of making specific reference to the biological recovery criteria for the species assessment and the threats/habitat recovery criteria for the CH assessment.

Joe,  
Did you address the population decline (population growth rate) criterion from Lindley et al. (2007) in the I&S for green sturgeon (not sure if it applies) or steelhead (definitely applies)? I wrote that the available analyses and results we have don't allow for inferences with respect to that criterion. I started down a path of using the life cycle modeling results to inform the population decline criterion, but ultimately wasn't comfortable with the the numerous assumptions that were needed to do so. I'm curious to hear how you handled that one.

Thanks,  
Brian

On Tue, Apr 16, 2019 at 10:27 AM Joe Heublein - NOAA Federal <[joe.heublein@noaa.gov](mailto:joe.heublein@noaa.gov)> wrote:  
Hi Rosalie,

Thanks for the example, I followed a similar approach in the green sturgeon section I&S for ROC LTO but made more specific reference to criteria in the recovery plan. Not sure if we closed the loop on your review but maybe we should stick with the schedule and wait until the CVO has a chance to review the I&S sections.

Thanks again

Joe

On Mon, Apr 8, 2019 at 3:59 PM Rosalie del Rosario - NOAA Federal <[rosalie.delrosario@noaa.gov](mailto:rosalie.delrosario@noaa.gov)> wrote:  
Hi Joe,

Good topic and I think a brief call can be effective. I don't have a template to offer, but attached is an example biop that was shared with me that addresses recovery more explicitly (see highlights). Keep the context in mind. It's for a simpler project than ROConLTO but nevertheless helpful. I also provided comments on the draft analytical approach re: analyzing likelihood of recovery under the jeopardy standard. I recommend the analysis for each species speak directly to the recovery criteria identified in the recovery plan. McElhany's VSP is for population-specific and the recovery criteria describe what the species needs to be recovered. Again, probably best to have a brief call. My calendar is updated.

Thanks,  
Rosalie

On Mon, Apr 8, 2019 at 9:38 AM Joe Heublein - NOAA Federal <[joe.heublein@noaa.gov](mailto:joe.heublein@noaa.gov)> wrote:

Hi Rosalie,

Naseem shared these thoughts on discussion of recovery criteria in integration and synthesis. Brian and I would like to have a brief call on how to incorporate a discussion of recovery criteria into the ROC LTO BO integration and synthesis section and check if you have any recent example paragraphs or templates on discussion of recovery criteria in I&S we can use. Our I&S section is due this Friday so if you can send any recent examples or templates in advance of our call that would be great.

Thanks

Joe

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