

Comments on the April 30 draft of the Lees Ferry Recreational Trout Fishery Management Recommendations: The Voice of Lees Ferry Anglers, Guides, and Businesses from Charles Yackulic and Scott VanderKooi.

Line 180 Does the catch rate ( $> 1$  trout/min) refer to each size class or overall catches? Also it might be unclear what you mean by "all size classes" to those less familiar with fisheries jargon. Another thing to consider is that CPUE values can be misleading and not always the best metric to monitor the status of fish populations (See Mike Yard's presentation at the Jan. 2015 AR meeting).

Lines 207-209 Not sure what is meant by "relatively immobile" or by this sentence in general...I assume food bases in all tailwaters are subject to a degree of dewatering and scouring due to operations.

Line 218 "Lee" should be "Lees".

Lines 219-220 This seems pretty speculative as written. One suggestion would be to replace "impacts" with something like "may affect". A counter argument to this statement that could be made is that HBC and other native fishes have done really well in the last decade despite the state of the aquatic foodbase in Glen Canyon.

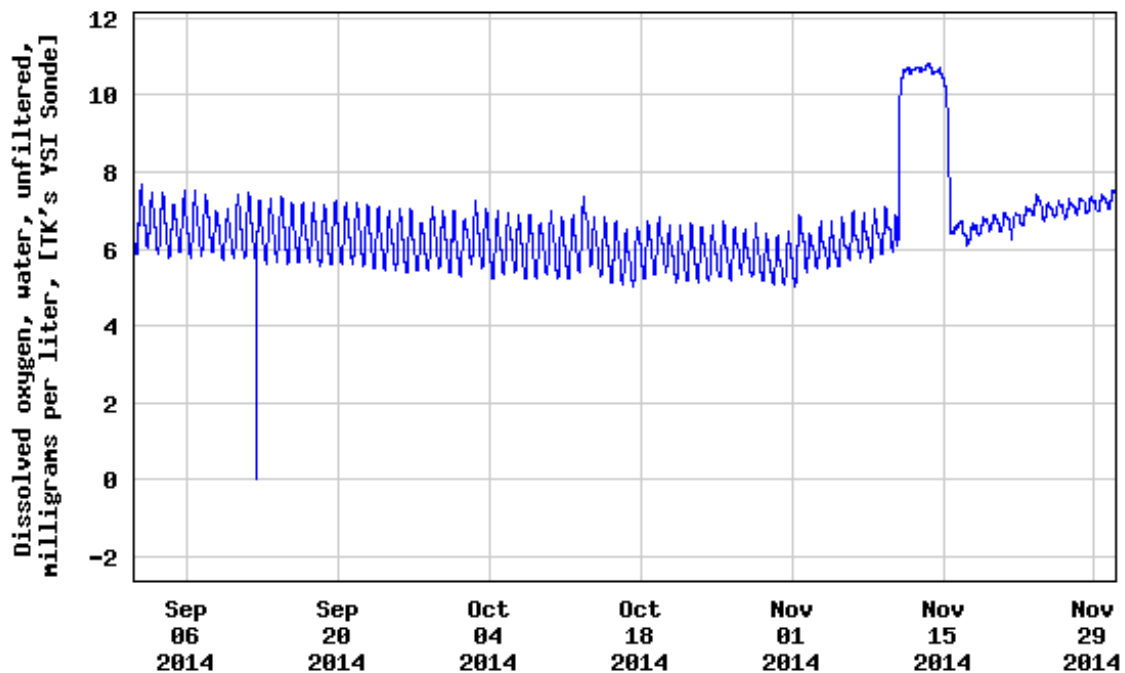
Lines 258-261 It's unclear from our data that the 6500 cfs minimums in Nov. 2014 contributed to the decline in adult trout. To date, the biggest drop in adult trout ( $> 275$  mm) abundance observed during the Natal Origins study occurred over the interval from July 2014 to September 2014. We do agree that a combination of relatively warm water, low DO, low food production, and high fish densities likely contributed to poor survival trout in Glen Canyon in the fall of 2014.

268-269 The 2008 HFE resulted in higher survival and recruitment, not spawning.

Line 276-278 Note that this is a temporary effect largely limited to the period of the HFE itself. It also looks like DO levels started increasing at the beginning of Nov. 2014, before the HFE (see plot on p.2).



### USGS 09380000 COLORADO RIVER AT LEES FERRY, AZ



---- Provisional Data Subject to Revision ----

297 In addition to prolific reproduction, I think it important to also add that high survival and recruitment of young trout are also key factors. Stock-recruit relationships for fish are often unreliable such that high reproduction alone won't always yield a large year class.

Line 302-304 This appears to be a pretty high bar. How likely it is that this criteria would ever be met?

Lines 308-309 Seems like this would also need the concurrence of a number of other folks including the GCDAMP and DOI not just AZG&F.

Line 310-311 Stable for how long?

Line 312-313 As commented previously, does the catch rate ( $> 1$  trout/min) refer to each size class or overall catches? Also it might be unclear what you mean by "all size classes" to those less familiar with fisheries jargon. Another thing to consider is that CPUE values can be misleading and not always the best metric to monitor the status of fish populations (See Mike Yard's presentation at the Jan. 2015 AR meeting). This criterion could limit the ability of managers to act when it might be critical to do so. A 2011-sized year class could be recruiting in and this constraint would limit any action if good numbers of one other size classes wasn't present. This could result in a boom and crash like we've seen over the last few years as the recruits from such a year class overwhelm the capacity of the foodbase to support the larger fish already present.

Line 313-314 Do you mean all the HBC related criteria in the NNFC EA? This should be clarified since there are two ways to trigger nonnative fish removal; one is with adult HBC and trout abundance and the second is trout abundance, river temperature, juvenile HBC survival, and sub-adult HBC abundance. This is likely a very high bar if all HBC triggers have to be met before TMFs could be implemented. This criterion would also limit the ability of managers to be pro-active since nothing could be done regarding trout abundance and managing the Lees Ferry fishery until HBC populations have really taken a turn for the worse.

Line 320-321 As with the above criteria, this would limit the ability of managers to be pro-active especially in the context of another year like 2011. Is it possible that compliance for release of triploids could never be attained?

Line 323 I'm a bit skeptical of the feasibility of this. The least difficult option would be to capture fish from the Paria River to Badger Rapid reach. There is, however, some evidence that population trends here track very closely with those in Glen Canyon so there may not be many fish to move once trout numbers decline.

Line 325-326 Given the constraints identified by NPS on live removal from the LCR confluence (only by boat), I have serious reservations about this approach being logistically feasible. First and foremost, there are considerable safety concerns associated with running a freighter loaded with live fish plus all the water needed to keep them alive through the canyon. It would also be extremely expensive since only a relatively small number of fish could be transported per each freighter trip.

Line 334 Data at the Lees Ferry gage shows DO minimums in 2014 got down to around 5 mg/L (see the plot on p.2). While levels this low are stressful, acute lethal levels that I've seen reported in the literature for rainbow trout are generally < 3mg/L.

Line 344 Suggest replacing "under normal release volumes" with "in the Lees Ferry reach".

Line 350-356 This would be a more finessed approach than TMFs. It would, however, be a difficult task especially if juvenile trout abundance were high and would likely require considerable effort (and expense) to be effective.

Line 390-394 As stated above, there is some evidence that population trends from the Paria River downstream to Badger Rapid track very closely with those in Glen Canyon so there may not be many fish to move once trout number decline.

Line 410 Note that many of the fish biologists working in the canyon think that warmer water releases from the dam over the last 10 years have been very beneficial for HBC. Consider revising to indicate what temperatures you mean by "warm".

Line 429-489 Rather than identifying particular projects and agencies to conduct them, we believe it would be more useful to focus on what information is needed to 1) understand how

environmental factors, operations, and management actions affect the aquatic ecosystem in Glen Canyon, including the food base and fish populations, and 2) to effectively manage the fishery. Some sections are already written like this or close to it, see Lines 464-467 and 487-489. GCMRC is planning to hold a PEP for the entire GCDAMP fisheries program in FY2016. We prefer to wait for the recommendations of that panel of experts to identify best methods and approaches for monitoring the Lees Ferry fishery and Glen Canyon trout population in order to meet the science needs of the GCDAMP rather than to have them identified for us and our cooperators in this document.