

Additional Comments

Note: These additional comments were received from Bill Persons and Gary Burton and have not been incorporated into the MOS tables for Goals 1, 2, 4, and 10.

In an 11/27 e-mail, Bill Persons raised the following issues:

PSD as an objective

As a measure of size structure of the population one can affect PSD in two ways. One can increase PSD by either 1) increasing the proportion of large fish in the population (increase numerator) or 2) decreasing the proportion of small fish in the population (decrease denominator). I think the PSD is more a metric to use and report, but don't know that one can set a target for it at this point. Even if we do set a metric, we need to keep in mind that there are (at least) two ways to influence PSD, and with the other MO's in the trout goal, PSD needs to be considered in concert with the other objectives.

Distribution of LF trout in downstream reaches objective

Given enough time and \$ one can measure it. Work in the early 90's showed that emigration or downstream movement of LF trout into lower reaches was essentially zero. Whether that has changed or not is another question, the perhaps deserves further research. One can address it, but some quick back-of-the envelope calculations suggests one would have to mark at a minimum 20,000 fingerlings in the LF reach (assuming 100% of them moved downstream) to detect a mark downstream. If less than 10% of the fish move downstream one would have to mark in the neighborhood of 200,000 fish to expect to detect one downstream.

In an 11/27 e-mail, Gary Burton had the following comments on Revised MOs from the Small Group on Aquatic Food Base and Fish

MO 1.1- 5:

1996 and 1997 are used to develop target values for these MOs. These years were unusual in both, quantity of water and management activities. It seems sensible to base targets on the "norm" of ROD operations rather than unusual and experimental circumstances for which current levels and repeat data are not available. However, this is a general comment as I am not familiar with the data.

MO 2.1:

Foot note 1 - I believe recent efforts (LCR) have pit-tagged HBC down to 100 mm and the new protocol for stock assessment is adopting some minimum size smaller than 150 mm.

Target level, etc. – Investigations indicate the LCR HBC population is healthy and stable over the period of our investigations. It seems logical the current level of 4330-4811 HBC from Marsh and Douglas makes a good target level, as well. I understand there is discussion about possible meta-population viability analyses, but in separating the LCR

from the mainstem, the evaluation becomes a mainstem MO. We are not likely to increase habitat, foodbase, flows, temperature, or other attributes of the LCR related to local humpback chub abundance with dam operations. It makes sense to me to make the current level the target. Maintenance of this level is the MO. Regarding the Comment column, will results of the new protocols for population estimates (2000) be incorporated into the target level over time, dropping the 91-96 estimates?

MO 2.2 and 2.3:

It is important to know annual year class strength (spawning success) and recruitment, but in the LCR these are targets we have no control over with dam operations. I suggest that targets could be set for mainstem aggregation MOs responding to changes in dam operations, but within the LCR this is just an important monitoring effort and not a MO with targets we can attain or maintain. For the LCR these two MOs can be removed (suggested) or the action taken changed from "maintain or attain" to "monitor." I want to be careful we do not create MOs and set targets for attributes we do not have control to achieve.

MO 2.4:

To make this MO consistent with the BO it should read similar to: Maintain or improve; HBC; Spawning Habitat; Mainstem or other tributaries; Uncertain Spawning Level; One Additional Spawning Aggregation; Comment - CPUE of specific size class would be the indicator of spawning success as in MO 2.2. Question: does the same size class used for the LCR (51-150 mm) hold true for the mainstem in light of the temperature difference and probable retarded growth rate?

MO2.5:

Disease and other parasites – Tim Hoffnagle's recent and past work may shed some light on the background level of disease and parasitism in HBC.

MO2.6:

Target Level – Rewrite: "Needs to be defined as the level above which the predation rate may/will (?) negatively affect **removal of jeopardy from** native fish." Some predation will always occur which is inherently negative to native fish at any level.

MO 2.7:

This MO will, in my opinion, be unattainable as written, regardless of the target level set. The CRE below GCD is not likely to ever support "populations" of RBS due to lack of suitable habitat (flooded bottomlands). Two suggestions to be consistent with the BO:

1. Convert this to a habitat objective under "Riparian" with habitat development targets at specific locations (Lees Ferry and inflow to Lake Mead - from the BO, or Cardenas or Havasu creeks – personal comm. with D. Kubly). Individuals (maybe aggregations) will come or not, but populations are not likely to develop.

2. Rewrite the MO similar to:

Attain; RBS; Presence or Occurrence; Inflow to Lake Mead; 0 (since 1991);
Post-dam average frequency of capture or two captures per 5 years (?); Target
is related to the capability of the habitat to attract and support the species.

Note that the BO only states “Develop actions that will help ensure the continued existence of the razorback sucker....” It does not say attain populations at specific target levels. This in concert with the very limited habitat suitability makes the conversion or rewrite of the MO a logical step to create a reasonably attainable objective.

MO 4.2:

Current Level – As an indicator → Current population estimate of RBT (and should include BRT) at the mouth of the LCR reach, + or – 3 miles.

Target Level – As an indicator → Reduction of these population estimates to 5% (?) of current level. This will relate directly to attainment of MO 2.6.

MO 10.3:

It appears that MO 4.1, 4.2, and 10.3 are potentially at cross-purposes. I think the problem is using “Angler CPUE” as the target attribute in MO 10.3. CPUE is certainly a method to assess progress toward the objective, but to maintain or increase Angler CPUE while pursuing MO 4.1 (Abundance reduction) and 4.2 (Distribution restriction) (as well as, 2.6 – reduced predation) seems conflicted. The conflict may be resolved by changing the attribute and targets to “angler satisfaction level” or making sure the target Angler CPUE is sufficiently reduced from current levels to reflect the objective reductions in abundance and distribution at Lees Ferry and downstream.

MO 10.4:

Understanding that GLCA and GRCA Management Plans are input to these targets, how do human-use induced increases in erosion rates, etc. in this MO match or conflict with the Sediment Goal and MO 23? Comments say “within the capacity of the CRE to absorb visitor impacts.” As far as I know, this in itself is an Information Need. One of the purposes of BHBFs is to help restore sediment to terrace beaches. We do not know how much of the BHBF effort would be sacrificed due to recreational use.