



United States Department of the Interior

FISH AND WILDLIFE SERVICE Mountain-Prairie Region



IN REPLY REFER TO:

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225-0486

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228-1807

ES/CO River Recovery Program/FY-04
F4
Mail Stop 65115

MAR - 1 2004

Mr. Michael R. Gabaldon
Bureau of Reclamation, Building 67
6th and Kipling
Denver, CO 80225-0007

Dear Mr. Gabaldon:

On February 24, 2004, Regions 2 and 6 of the U.S. Fish and Wildlife Service (Service) and the Arizona Game and Fish Department (Department) met to discuss issues of mutual interest. One such issue was population estimates for humpback chub in Grand Canyon. This was a follow-up to discussions held in August 2003. At the heart of these discussions is a mutual desire to agree on a technical approach for population estimation that would conform with the Recovery Goals published in August 2002.

The approach to population estimation taken by the Adaptive Management Program (AMP) and the Grand Canyon Monitoring and Research Center (GCMRC) differs from the approach identified in the Recovery Goals. According to the August 1, 2002, Humpback Chub, Bonytail, Colorado Pikeminnow, and Razorback Sucker Recovery Goals, "*The Service considers a reliable (population) estimate as one that is based on a multiple mark-recapture model.*" Further, "*...closed-population, multiple mark-recapture estimators (Otis et al. 1978; Burnham et al. 1987; Chao 1989; Osmundson and Burnham 1998) are recommended for deriving population point estimates and to guide development of sampling designs that conform to these models. The accuracy and precision of each point estimate will be assessed by the Service in cooperation with the respective recovery or conservation programs....*" The AMP/GCMRC have employed an Age-Structured Mark Recapture (ASMR) modeling approach that focuses on stock assessment. This is an innovative strategy. However, the conundrum that we discussed in August and again in February is how to resolve whether these two alternatives are both acceptable.

Over the past few years, humpback chub population estimates for the Grand Canyon have been highly variable. These estimates have been generated through various models, with associated assumptions. Most of the estimates were focused on the Little Colorado River, which may only

account for a portion of the population. Fish in the Grand Canyon population move extensively between the Little Colorado River and the mainstem Colorado River, hence the Recovery Goals' requirement of geographic closure for a closed-population estimator may not have been met.

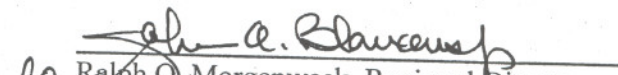
Steps have been taken to determine whether the different approaches may both be appropriate. In November 2003, an independent scientific panel was convened at the request of the Adaptive Management Work Group of the Glen Canyon Dam Adaptive Management Program to review the methods used for estimating the abundance of endangered fish populations in both the Grand Canyon and Upper Colorado River Basin. The panel found "...little merit in changing the sampling practices..." for those populations, bearing out the value of both approaches. It is unclear, however, how comparable the estimates are between the two methods. We believe that, although the models currently employed in Grand Canyon may prove to be fully adequate for tracking the demographic requirements of the recovery goals, a need exists to verify the information generated by those models against the estimates generated by the methods advocated in the Recovery Goals, and to determine as accurately and precisely as possible the number of adult humpback chub constituting the Grand Canyon population.

To achieve this, we believe the most prudent approach is to conduct a concurrent, multiple-pass, mark-recapture population estimate in both the Little Colorado River and the mainstem Colorado River in fall 2004. This approach would cover the area where adults reside at this time of year, and would provide estimates comparable to those made in the early 1990s. Estimates from the two approaches could be directly compared to validate either or both, based on validation criteria that we would jointly agree to prior to the field effort. If the two approaches are sufficiently in agreement for estimating annual population abundance, the ASMR model would be recommended as the "reliable estimate" for the purposes of meeting recovery goals.

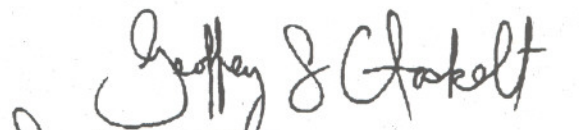
We believe that this approach could help verify the models currently in use, and firmly and defensibly establish a current baseline of humpback chub abundance in Grand Canyon. However, we recognize that this step comes at some difficulty and at some expense. The proposed validation effort would also require logistical, funding, and other support from various cooperators, especially including your agency.


Thank you for your consideration in this matter, and we look forward to discussing this issue and other matters at future AMP meetings and working together to conserve and recover the humpback chub.

Sincerely,


Ralph O. Morgenweck, Regional Director
Region 6, U.S. Fish and Wildlife Service

Enclosed: See Enclosed Distribution List


H. Dale Hall, Regional Director
Region 2, U.S. Fish and Wildlife Service


Duane L. Shroufe, Director
Arizona Game and Fish Department