

Motion: The Adaptive Management Work Group is very concerned about the status of humpback chub and other native fish in the Colorado River Ecosystem. We recommend that the Secretary place a high priority on protecting and enhancing native fish populations in the Colorado River ecosystem through the following actions:

1. In 2003, the Grand Canyon Monitoring and Research Center will lead the development of a comprehensive research and management strategy to enhance populations of native fish (*i.e.*, humpback chub, flannelmouth sucker, bluehead sucker, razorback sucker and speckled dace). A draft of this comprehensive management strategy will be presented to the AMWG at their July 2003 meeting for review and a final will be presented at a fall meeting for approval. The comprehensive strategy will:
 - a. Review the full range of threats to native fish in the CRE (*e.g.*, predation, competition, parasitism, and alterations of water temperature, flow regimes & turbidity).
 - b. Review the full range of potential management actions to increase recruitment and decrease mortality of native fish (*e.g.*, non-native fish control, parasite control, modifications of flow, temperature and turbidity regimes, etc.).
 - c. Identify the pros and cons of all potential management actions (*e.g.*, effectiveness, risk to native species, cost, ease/immediacy of implementation, etc.).
 - d. Produce a recommended sequence of research and management actions (implemented either singly or in combination) to increase the abundance of humpback chub and other native fish. Rapidly enhancing humpback chub populations will have a higher precedence in developing the sequence of management actions than enhancing other native fish populations or producing the best experimental designs.
 - e. Identify the steps involved to accomplish each recommended research and management action, the roles of the responsible agencies, and potential sources of funding.

While this comprehensive research and management strategy is being developed, the following actions will be initiated or completed:

2. In 2003, the appropriate entity will implement the four projects to enhance native fish that are described in the non-native control *ad hoc* group report. These projects are:
 - a. National Park Service will determine the efficacy of using a weir in Bright Angel creek to control brown trout.
 - b. Grand Canyon Monitoring and Research Center will evaluate removal of non-native fish (primarily salmonids) from the Colorado River near the confluence with the Little Colorado River.
 - c. Grand Canyon Monitoring and Research Center will evaluate the effectiveness of fluctuating flows to disadvantage non-native fish.
 - d. Grand Canyon Monitoring and Research Center will evaluate catfish and carp removal methods in the Little Colorado River.
3. In 2003-2004, the National Park Service will conduct the appropriate compliance to expand and implement the Bright Angel control effort to include:
 - a. Removal of all non-native fishes from the weir at Bright Angel Creek.

- b. Removal of all non-native fishes above the weir at Bright Angel Creek.
 - c. Determining the efficacy of control efforts for non-native fish in other tributaries including Clear Creek and Tapeats Creek.
4. In 2003, the second year of a two-year sediment conservation experiment is taking place. This experiment should be completed, but with additional research that will help design a future experimental flow to benefit humpback chub. The Grand Canyon Monitoring and Research Center will:
 - a. Determine the time of year that young-of-year humpback chub from the Little Colorado River enter the mainstem and the cues (e.g., temperature, flows, etc.) that prompt migration.
 - b. Determine the effects of fall steady flows on habitat conditions for native and non-native fish (if the autumn sediment input scenario does not occur in 2003).
 5. In 2004, Reclamation will implement an experimental flow to enhance recruitment of humpback chub in the mainstem. The experimental flow should resemble a natural hydrograph, and the spring peak flows should coincide with a sediment input if at all possible.
 6. In 2003, Reclamation will complete the environmental assessment and risk analysis for a Temperature Control Device, and the AMP will make a recommendation to the Secretary of Interior on implementation. The TCD should, in concert with other management actions, provide the full range of summer and winter temperature control needed to provide for mainstem spawning of humpback chub, control of non-native species, and enhancing habitat for razorback sucker. The planning must include an analysis of potential worst-case scenarios (e.g., changes in the food base, invasion of problematical fish, parasites, or disease organisms, etc.) and remedial actions.
 7. In 2003, the Grand Canyon Monitoring and Research Center will conduct or assist with the necessary research to determine whether control of Asian tapeworm can and should be implemented to help stem the decline of humpback chub. The research and risk/reward analysis should be completed in time to insure implementation in 2004.
 8. In 2003, Reclamation will lead a review of the potential threats to the humpback chub population in the Little Colorado River that may arise from activities in the watershed, and suggest potential management actions and opportunities for landowners and stakeholders to ameliorate these threats.
 9. In 2003, Reclamation will lead the development of a management plan for razorback sucker in Grand Canyon. The plan will be completed in 2004.
 10. In 2003, Reclamation will lead the completion of an implementation plan for establishing a second spawning aggregation of humpback chub in Grand Canyon.
 11. In 2003, the Grand Canyon Monitoring and Research Center will determine the feasibility of population augmentation for humpback chub. The assessment will consider broodstock development, options for grow-out ponds or tributaries, options for refugia populations, etc. Any augmentation activities must maintain the genetic diversity of humpback.
 12. In 2003, Reclamation and the National Park Service will significantly increase public outreach to support current and future research and management activities.