

**Glen Canyon Dam Adaptive Management Work Group**  
**Agenda Item Information**  
**April 29-30, 2009**

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Agenda Item

2007 and 2008 Biological Opinions Conservation Measures Update

1. Razorback Sucker Habitat Assessment for Potential Augmentation (Reclamation)
2. Near Shore Ecology and Fall Steady Flow Science Plan (GCMRC)
3. Humpback Chub Translocation (NPS/FWS)
4. Non-native fish control plan (GCMRC)
5. Refuge development (FWS)
6. Q&A

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Action Requested

✓ Information item. No action requested.

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Presenters

Matthew E. Andersen, Biological Program Manager, Grand Canyon Monitoring and Research Center

Martha Hahn, Chief, Science and Resource Management, Grand Canyon National Park

Dennis Kubly, Chief, Adaptive Management Group, Upper Colorado Region, Bureau of Reclamation

Glen Knowles, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service

Steve Mietz, Natural Resources Group Leader, Grand Canyon National Park

Sam Spiller, Lower Colorado River Coordinator, U.S. Fish and Wildlife Service, Phoenix, AZ

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Previous Action Taken

- ✓ Other: Two recent Biological Opinions (BOs) contain conservation measures that have programmatic and budgetary implications for the Glen Canyon Dam Adaptive Management Program:
1. Final Biological Opinion for the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, December 12, 2007.
  2. Final Biological Opinion for the Operation of Glen Canyon Dam, February 27, 2008. (This BO related to the Bureau of Reclamation's experimental high flow test of approximately 41,500 cfs for 60 hours beginning March 4, 2008, as the initial action in a series occurring through 2012, as described in an Environmental Assessment issued in February 2008.)

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Relevant Science

- ✓ The following describes the relevant research or monitoring on this subject:  
Much of the science and planning related to these subjects can be found in the following documents and the extensive references therein:
- "Science Plan for Potential 2008 Experimental High Flow at Glen Canyon Dam," which can be found at [http://www.gcmrc.gov/research/high\\_flow/2008/documents.aspx](http://www.gcmrc.gov/research/high_flow/2008/documents.aspx), the last document under "Planning Documents," click on "Proposed 2008 High-Flow Science Plan."

2007 and 2008 Biological Opinion Conservation Measures Update, continued

- At the request of the Bureau of Reclamation, GCMRC conducted a science workshop in April 2007 to solicit scientific recommendations for consideration in preparation of the Long Term Experimental Plan EIS. The proceedings document was made available to AMWG via email on May 7, 2008, can be found at <http://pubs.er.usgs.gov/usgspubs/ofr/ofr20081153>.
- Valdez, R.A., S.W. Carothers, M.E. Douglas, M. Douglas, R.J. Ryel, K.R. Bestgen, and D.L. Wegner. 2000. Research and implementation plan for establishing a second population of humpback chub in Grand Canyon. Report to Grand Canyon Monitoring and Research Center, Flagstaff, AZ.
- Grand Canyon Wildlands Council, Inc. and W. Leibfried Environmental Services. 2008. A National Park Service plan to translocate humpback chub into Shinumo Creek, Grand Canyon. Report to Grand Canyon National Park, AZ.

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Background Information

The following are conservation measures that were included in the 2007 Shortage Guidelines and 2008 Glen Canyon Dam Operations biological opinions, with an indication of under which agenda item updates will be provided during the September AMWG meeting.

BO	Conservation Measure	AMWG Agenda Item
<b>Humpback chub</b>		
2007	Genetic Biocontrol Symposium (Genetic Biocontrol of Nonnative Fishes)	Nothing new to report; not on the AMWG agenda.
2007	Humpback Chub Parasite Monitoring	Nothing new to report; not on the AMWG agenda.
2007	Razorback Sucker Habitat Assessment/Potential Augmentation	This agenda item.
2007, 2008	Humpback Chub Sediment Research/ Humpback Chub Near Shore Ecology Study	This agenda item.
2007, 2008	Nonnative Fish Control	This agenda item.
2007, 2008	Humpback Chub Refuge	This agenda item.
2008	Humpback Chub Consultation Trigger	Nothing new to report; not on the AMWG agenda.
2008	Comprehensive Plan for the Management and Conservation of Humpback Chub in Grand Canyon	Nothing new to report; not on the AMWG agenda.
2008	Humpback Chub Translocation	This agenda item.
2008	Monthly Flow Transition Study	This agenda item.
2008	Little Colorado River Watershed Planning	Nothing new to report; not on the AMWG agenda.

BO	Conservation Measure	AMWG Agenda Item
<b>Kanab ambersnail</b>		
2007	Kanab Ambersnail Monitoring and Research	Nothing new to report; not on the AMWG agenda.
2008	Kanab Ambersnail Habitat Protection	Nothing new to report; not on the AMWG agenda.
<b>Southwester willow flycatcher</b>		
2007	Southwestern Willow Flycatcher Monitoring and Research	Nothing new to report; not on the AMWG agenda.

The following presentations will be made during this agenda item:

**1. Razorback Sucker Habitat Assessment and Potential Augmentation – Dennis Kubly**

The razorback sucker is extremely rare in Grand Canyon and may be extirpated. There is a reproducing, recruiting population in Lake Mead, however, and there may be habitat that would support some or all stages of the life cycle in the Colorado River above Lake Mead. This conservation measure agrees to conduct a habitat assessment for razorback sucker and, if appropriate, attempt to augment the population in Lake Mead. A meeting of fisheries biologists working with the razorback sucker in Lake Mead is scheduled for March 31, 2009, to discuss ongoing activities and implementation of this conservation measure. Results of that meeting will be provided at the April 29-30 AMWG meeting.

**2. Near Shore Ecology and Fall Steady Flow Science Plan – Matthew Andersen**

The 2008 Environmental Assessment and Biological Opinion on the Operation of Glen Canyon Dam described a series of experimental flows that would be released from the dam 2008-2012. GCMRC has been tasked with studying the biological responses to these flows, and has determined that there are three primary projects that will focus data collection and analysis around appropriate time frames to contribute to our understanding. The three projects are: 1) monitoring of the aquatic food base in the Colorado River in Grand Canyon, 2) monitoring of the Lees Ferry rainbow trout population, and 3) the near shore ecology study (also a conservation measure in the 2008 BO).

Together with cooperators (Arizona Game and Fish Dept., Ecometric, Inc., and the University of Florida) GCMRC is developing, implementing, and coordinating these three projects. Initial studies of the March 2008 experimental high flow have been completed and reporting on these studies has been initiated (and in some cases is complete). A full report on resource responses to the March 2008 HFE will be completed in 2010.

Both the aquatic food base and the rainbow trout population were monitored before and after the HFE; initial analysis suggests that responses of these resources to the event were limited.

In August and September GCMRC designed and implemented a pilot test to investigate responses of humpback chub and other species to MLFF and September steady flows. Initial

reports concluded that young humpback chub numbers are relatively higher in August compared to previous years.

The 2008 pilot project also explored some new marking techniques for small-bodied fishes. The data and techniques used by the 2008 pilot project will inform the new cooperator (Univ. Florida) as they proceed with a field and laboratory study 2009-2012.

A new work plan that describes all three of these elements will be assembled by July 2009. This work plan will also identify the summer-fall flow levels that would maximize learning during the 5 year experiment.

- Monitoring protocols for the aquatic food base were most recently described in the GCMRC FY 2009 work plan and the 2008 HFE Science Plan.
- Monitoring protocols for the rainbow trout of the Lees Ferry reach were most recently described in the GCMRC FY 2009 work plan and the 2008 HFE Science Plan.
- The near shore ecology protocols were described in the response of the cooperator to the competitive solicitation. The statement of work was peer reviewed by an external panel and the cooperator responded to reviewer comments.

### **3. Humpback Chub Translocation – Glen Knowles (FWS), Martha Hahn and Steve Mietz (NPS)**

Fish and Wildlife Service: In July 2008, 506 juvenile humpback chub were collected from the Little Colorado River by FWS, Arizona Game and Fish Department (AGFD), GCMRC and the Grand Canyon Wildlands Council. As a result of these efforts, 299 fish were PIT tagged and translocated from the mouth of the Little Colorado River upstream to above Chute Falls to augment an existing population above travertine dams. Currently there are 586 juvenile humpback chub on station at Dexter National Fish Hatchery; 300 of these fish will be translocated into Shinumo Creek in June with follow up monitoring trips in July and September. The remaining 286 fish will be retained as a permanent genetic refuge for humpback chub. In July 2009, an additional 300 fish will be translocated above Chute Falls. During this effort, biologists will also attempt to collect additional fish to maintain the Dexter refuge (below) and for Shinumo Creek. Translocations and collections will also occur in July 2010 if population estimates indicate this action is appropriate and enough fish are available to support these actions.

National Park Service: The National Park Service will report on the status of the NPS translocation project for Shinumo Creek.

### **4. Non-Native Fish Control Plan – Matthew Andersen**

GCMRC has completed the first of a two-stage project to describe approaches for controlling nonnative aquatic species in Grand Canyon. This first stage is called Nonnative Fishes Control in Grand Canyon: Historical Perspectives and Recommended Approaches for Monitoring, Research and Planning in the Immediate Future. It is intended to bring together historic and concurrent information regarding available control methods for nonnative aquatic species, particularly fish, in Grand Canyon. GCMRC focused on a short term response plan first because of the need to increase preparedness should large numbers of nonnative species that might threaten native species become a greater risk. Cooperating agencies, especially U.S. Fish and

Wildlife Service, Arizona Game and Fish Department, Bureau of Reclamation, and National Park Service have all provided constructive criticism on previous iterations. This final iteration has been reviewed by the AMP Science Advisors and extensive revisions were conducted to conform with the SA review. With the completion of this short term plan GCMRC will now focus attention on a long-term plan intended to review sources and distribution of nonnative species and a more complete risk assessment for native fish in Grand Canyon.

GCMCR intends to distribute this plan at the AMWG meeting.

**5. Refuge Development – Glen Knowles and Sam Spiller**

Currently there are 586 juvenile humpback chub on station at Dexter National Fish Hatchery; 300 of these fish will be translocated into Shinumo Creek in June with follow up monitoring trips in July and September. The remaining 286 fish will be retained as a permanent genetic refuge for humpback chub.

Additional collections will be made from the Little Colorado River in July, and possibly October of 2009, and transported to Dexter. These fish will be periodically augmented by additional collections from the Little Colorado River as recommended in the genetics management plan being written by Dr. Connie Keeler-Foster. Development of the refuge will be accomplished in concurrence with the 2007 and 2008 biological opinions.