

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
August 12-13, 2009

Agenda Item

2007 and 2008 Biological Opinions Conservation Measures Update

Action Requested

✓ Information item. No action requested.

Presenters

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

Dennis Kubly, Chief, Adaptive Management Group, Bureau of Reclamation

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

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.)

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, the last document under "Planning Documents," click on "Proposed 2008 High-Flow Science Plan."
 - 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.

2007 and 2008 Biological Opinion Conservation Measures Update, continued

- 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.

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 August 2009 AMWG meeting.

BO	Conservation Measure	AMWG Agenda Item
Humpback chub		
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	Under “GCMRC Updates” on this agenda.
2007, 2008	Nonnative Fish Control	Under “GCMRC Updates” on this agenda.
2007, 2008	Humpback Chub Refuge	Nothing new to report; not on the AMWG agenda.
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	Under “Humpback Chub Comprehensive Plan” on this agenda.
2008	Humpback Chub Translocation	This agenda item (two reports).
2008	Monthly Flow Transition Study	Nothing new to report; not on the AMWG agenda.
2008	Little Colorado River Watershed Planning	Nothing new to report; not on the AMWG agenda.
Kanab ambersnail		
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.

BO	Conservation Measure	AMWG Agenda Item
Southwester willow flycatcher		
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:

Razorback Sucker Habitat Assessment and Potential Augmentation (Kubly)

This conservation measure agrees to conduct a habitat assessment for razorback sucker and, if appropriate, attempt to augment the population in Lake Mead. In conjunction with the Shinumo Creek humpback chub translocation effort, Reclamation and National Park Service personnel did a reconnaissance of the potential razorback sucker habitat in the reach of the Colorado River from below Lava Falls to the inflow to Lake Mead. They noted that there is a fair amount of "good" habitat below Lava Falls, but below Diamond Creek the river either is confined by bedrock in a canyon, or consists of a channel cut through old river deposits in the reservoir. Observations made during that river trip will be provided to AMWG. In another action, Region 2 Fish and Wildlife Service has informally requested to Region 6 that Lake Mead be included as a named recovery site in the upcoming reissuance of the recovery goals for the four big river endangered fish. Previous sampling of razorback sucker larvae in the inflow to Lake Mead may be evidence for a potential Lower Grand Canyon/Lake Mead population.

Reclamation contact: Dennis Kubly (dkubly@usbr.gov, 801-524-3715)

Humpback Chub Translocations

Chute Falls Translocation (Knowles)

Originally a conservation measure of the 2002 biological opinion on the operation of Glen Canyon Dam and mechanical removal of nonnative fish, translocations of juvenile humpback chub from near the mouth of the Little Colorado River upstream approximately 16 km to above Chute Falls has been ongoing since 2003. The purposes of the project were, and are,

- to extend the range of the species upstream in the Little Colorado River into reaches previously unoccupied, presumably due to the presence of the barrier falls,
- to improve the survivorship of juvenile humpback chub by moving juveniles to areas of the Little Colorado River with better nursery habitats, and
- to glean information on the life history of the species.

Translocations were conducted from 2003-2005, and in 2008; 1,449 juvenile humpback chub have been translocated so far. In 2008, FWS began PIT-tagging all translocated fish, which will greatly aid in assessing the movement and survivorship of these fish. Previous efforts to mark translocated fish with elastomer tags were met with limited success, but data gathered from those efforts revealed that the conservation measure has been extremely effective.

Translocated humpback chubs have exhibited the fastest growth rates ever recorded for this species, 6-10.4 mm/month, and two-year old fish over 200 mm total length (typically a 4-year old fish) have been documented. Translocated humpback chub also apparently spawned upstream of the falls, as evidenced by the presence of fish in breeding condition and fry, so suitable spawning habitat is also likely present in the upstream reach. Also, Chute Falls is apparently not a consistent physical barrier

to the species, as five fish that were previously marked below the falls have since been recaptured upstream of the falls.

Up to 300 juvenile humpback chub will be translocated in 2009. The FWS goal for the reach above Chute Falls is to maintain a minimum of 200 adult fish upstream of the falls that approximates a natural population size and age distribution, and with up- and downstream movement, to create a continuous reach and extension of the species range. Translocations for the remainder of the experimental period of the biological opinion, 2010-12, will be dependent on monitoring results in attainment of this goal.

FWS contact: Glen Knowles (glen_knowles@fws.gov, 602-242-0210)

Shinumo Creek Translocation (Mietz)

In mid-June 2009, the National Park Service, in conjunction with the Bureau of Reclamation, the Grand Canyon Wildlands Council, the Arizona Game and Fish Department, and the US Fish and Wildlife Service, successfully translocated 300 juvenile humpback chub previously removed from the Little Colorado River to Shinumo Creek located within Grand Canyon National Park. Prior to the translocation, biologists used hoop nets, seines, angling, and electro-fishing equipment to remove over 800 non-native rainbow trout from Shinumo Creek. On June 15, following non-native fish removal efforts, 300 juvenile humpback chub were flown by helicopter to an area near Shinumo Creek for release. Following the tempering of humpback chub to Shinumo Creek water conditions, the fish were successfully released into several pools. Snorkeling observations revealed that, within minutes, the newly released chub were actively feeding in the water column and otherwise behaving normally. There was no fish mortality during the translocation.

The goal of this experiment is to gather information about how this endangered species will respond to translocation to a smaller Grand Canyon tributary. Information gathered from this effort will contribute to potential establishment of a second population of humpback chub in Grand Canyon and provide an opportunity for rearing humpback chub in a natural environment outside of the Little Colorado River.

The humpback chub that were released in Shinumo Creek were captured in July and October 2008 near the mouth of the Little Colorado River. The 2 – 4 inch (50 – 130 mm) fish were transported out of the canyon by helicopter and then were treated to remove parasites at the Arizona Game and Fish Department's Bubbling Ponds Fish Hatchery. The fish overwintered at the U.S. Fish and Wildlife Service Dexter National Fish Hatchery and Technology Center in Dexter, New Mexico where they grew to a size that would allow identification tags to be implanted. PIT (passive integrated transponder) tags, small electronic tags that aid in monitoring after translocation, were implanted within the fish a month before the translocation.

Biologists will conduct several monitoring trips over the next three years to determine the long-term success of the Shinumo Creek humpback chub translocation experiment. Beginning in early July 2009, snorkeling and hoop nets will be used to collect data on humpback chub abundance and growth in the translocation area. Since all humpback chub were implanted with PIT tags, biologists can record their movements. In addition, the installation of a PIT tag antenna near the mouth of Shinumo Creek will assist in tracking the movements of fish; of special interest is whether they leave the creek for the mainstem and under what flow conditions. These monitoring data will be used to help prioritize the next steps for humpback chub conservation activities in Grand Canyon National Park.

2007 and 2008 Biological Opinion Conservation Measures Update, continued

NPS contact: Steve Mietz (steven.mietz@nps.gov, 928-226-0631)

Conservation Measures Razorback Sucker

Adaptive Management Work Group
August 12-13, 2009
Phoenix, AZ
Dennis Kubly, Bureau of Reclamation

Conservation Measures Razorback Sucker

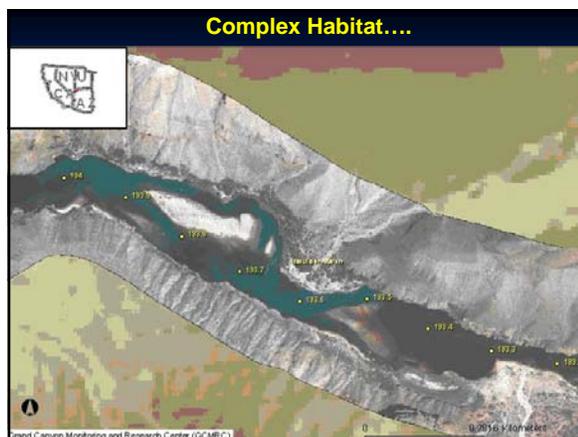
- The 2007 biological opinion on interim guidelines for Lake Powell and Lake Mead operations provides a not likely to adversely affect determination for razorback sucker or its critical habitat based on:
- The species is extremely rare in the action area, and ongoing monitoring should detect any changes in occurrence;
- Reclamation's conservation measures for humpback chub will help to minimize adverse effects, and;
- Reclamation will, as a conservation measure, undertake an effort to examine the potential of habitat in the lower Grand Canyon for the species, and institute an augmentation program in collaboration with FWS, if appropriate.

Razorback Sucker CM

- Discussions with USFWS, NPS, and Reclamation have defined the term "lower Grand Canyon" as the area from Lava Falls in Grand Canyon down to the inflow area of Lake Mead, wherever that location is on a yearly basis. The "inflow" area was also recognized as a fairly large area consisting of the river, lake, and a portion of the lake extending out into the lake for a couple miles. It was also recognized that the GCDAMP administrative boundary ended at river mile 277, and that the MSCP administrative boundary started at river mile 235, so there is a 42 mile overlap between the two programs.

Razorback Sucker CM

- May 2009 reconnaissance trip by BOR and NPS. Counted backwaters and islands, observed vegetation and channel form and composition, recorded water temperatures, and conducted a limited number of seine samples in backwaters.
- Found a fair amount of "good" habitat below Lava Falls, but below Diamond Creek the river is either confined by bedrock in a canyon, or consists of a channel cut through old river deposits in the reservoir.



Razorback Sucker CM

- Region 2 Fish and Wildlife Service has informally requested to Region 6 that Lake Mead be included as a named recovery site in the upcoming reissuance of the recovery goals for the four big river endangered fish. Previous sampling of razorback sucker larvae in the inflow to Lake Mead may be evidence for a potential Lower Grand Canyon/Lake Mead population.