

# RECLAMATION

*Managing Water in the West*

## Conservation Measures 2007 and 2008 Biological Opinions Glen Canyon Dam Operations

GCDAMP TWG Meeting

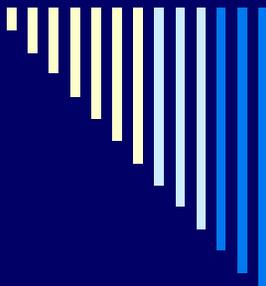
April 8-9, 2008

Dennis Kubly, Bureau of Reclamation



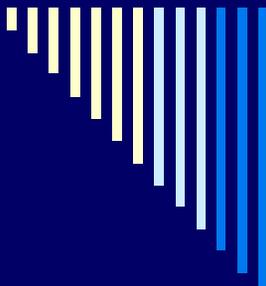
U.S. Department of the Interior  
Bureau of Reclamation

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# 2007 Biological Opinion Findings

- 2007 Shortage Guidelines -- implementation of the Shortage Guidelines is not likely to jeopardize the continued existence of the humpback chub, the southwestern willow flycatcher, or the Kanab ambersnail, and not likely to destroy or adversely modify designated critical habitat for the humpback chub or the southwestern willow flycatcher.
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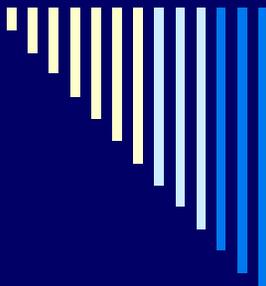


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# 2008 Biological Opinion Findings

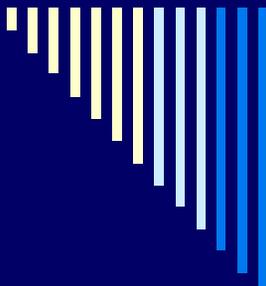
- High Flow Test and Fall Steady Flows 2008-2012 -- implementation of the March 2008 high flow test and the five-year implementation of MLFF with steady releases in September and October, as proposed, is not likely to jeopardize the continued existence of the humpback chub or the Kanab ambersnail, is not likely to destroy or adversely modify designated critical habitat for the humpback chub, and is not likely to adversely affect the razorback sucker (*Xyrauchen texanus*) and its critical habitat, or the southwestern willow flycatcher (*Empidonax traillii extimus*) and its critical habitat
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# Shortage BO Conservation Measures

- Non-native Fish Control
  - HBC Broodstock Management Plan and Refuge
  - Genetic Biocontrol Symposium
  - Sediment Research
  - HBC Parasite Monitoring
  - Southwestern Willow Flycatcher Monitoring
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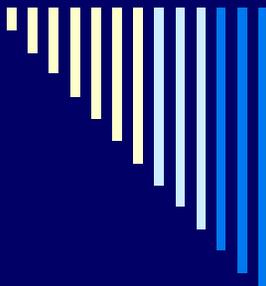
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# HFE-FSF Conservation Measure 1

## □ *Humpback Chub Consultation Trigger*

- Reinitiation of formal consultation will occur if the population of adult humpback chub ( $\geq 200$  mm [7.87 in] TL) in Grand Canyon declines significantly, or, if in any single year, based on the age-structured mark recapture model (ASMR; Coggins 2007), the population drops below 3,500 adult fish within the 95 percent confidence interval
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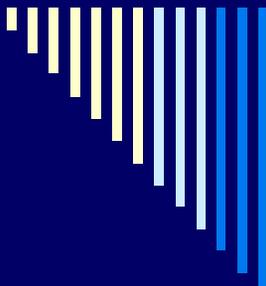
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## HFE-FSF Conservation Measure 2

- *Comprehensive Plan for the Management and Conservation of Humpback Chub in Grand Canyon*
    - Reclamation will continue to work with AMP cooperators to develop a comprehensive approach to management of humpback chub. Reclamation has committed to specific conservation measures in this biological opinion, but will also consider funding and implementing other actions not identified here to implement the plan.
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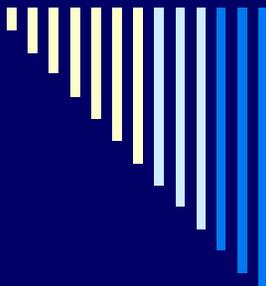
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# HFE-FSF Conservation Measure 3

## □ *Humpback Chub Translocation*

- In coordination with other Department of the Interior (DOI) AMP participants and through the AMP, Reclamation will assist NPS and the AMP in funding and implementation of translocation of humpback chub into tributaries of the Colorado River in Marble and Grand canyons
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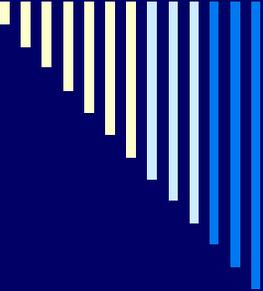
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# HFE-FSF Conservation Measure 4

## □ *Nonnative Fish Control*

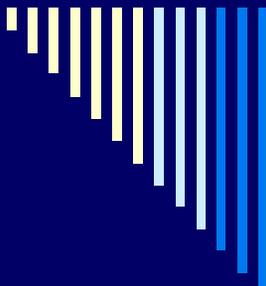
- As first presented in the biological opinion on the Shortage Guidelines, Reclamation will, in coordination with other DOI AMP participants and through the AMP, continue efforts to assist NPS and the AMP in control of both cold- and warm-water nonnative fish species in both the mainstem of Marble and Grand canyons and in their tributaries, including determining and implementing levels of nonnative fish control as necessary
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# HFE-FSF Conservation Measure 5

- *Humpback Chub Nearshore Ecology Study*
    - In coordination with other DOI AMP participants and through the AMP, Reclamation will implement a nearshore ecology study that will relate river flow variables to ecological attributes of nearshore habitats (velocity, depth, temperature, productivity, etc.) and the relative importance of such habitat conditions to important life stages of native and nonnative fishes
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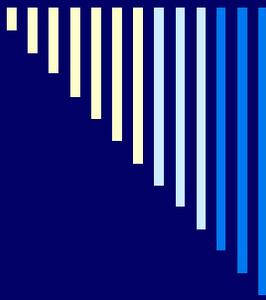


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# HFE-FSF Conservation Measure 6

## □ *Monthly Flow Transition Study*

- Transitions between monthly flow volumes can often result in drastic changes to nearshore habitats. Reclamation has committed to adjusting daily flows between months to attempt to attenuate these transitions such that they are more gradual, and to studying the biological effects of these transitions, in particular to humpback chub. If possible, Reclamation will work to adjust September and October monthly flow volumes to achieve improved conditions for young-of-year, juvenile, and adult humpback chub, as acceptable to the FWS.
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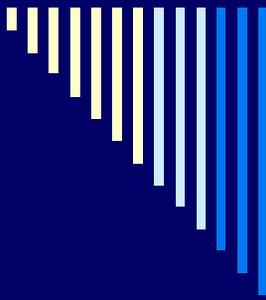
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# HFE-FSF Conservation Measure 7

## □ *Humpback Chub Refuge*

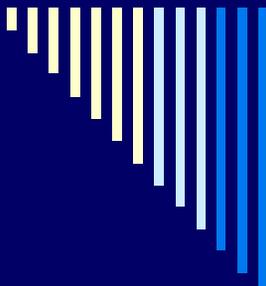
- Once appropriate planning documents are in place, and refuge populations of humpback chub are created (as a conservation measure of the Shortage Guidelines biological opinion), Reclamation will assist FWS in maintenance of a humpback chub refuge population at a Federal hatchery or other appropriate facility by providing funding to assist in annual maintenance.
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# HFE-FSF Conservation Measure 8

- *Little Colorado River Watershed Planning*
    - Reclamation will continue its efforts to help other stakeholders in the Little Colorado River watershed develop watershed planning efforts, with consideration for watershed level effects to the humpback chub in Grand Canyon.
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# HFE-FSF Conservation Measure 9

## □ *Kanab Ambersnail Habitat Protection*

- Reclamation will, through the AMP, temporarily remove and safeguard all Kanab ambersnails found in the zone that would be inundated during the high flow test, as well as approximately 15 percent (17 m<sup>2</sup> [180 ft<sup>2</sup>]) of the Kanab ambersnail habitat that would be flooded by the experimental high flow test. Ambersnails will be released above the inundation zone, and habitat will be held locally above the level of inundation until the high flow test has ended (approximately 60 hours). Habitat will be replaced in a manner that will facilitate regrowth of vegetation. Subsequent monitoring of this conservation measure will be coordinated with GCMRC.
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