

**Glen Canyon Dam Adaptive Management Work Group**  
**Agenda Item Information**  
**September 9-10, 2008**

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Agenda Item

Humpback Chub Refuge Development

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Action Requested

√ Information item only. We will answer questions but no action is requested.

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Presenters

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

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Previous Action Taken

The Fish and Wildlife Service (FWS) 2008 biological opinion on the operation of Glen Canyon Dam included as a conservation measure the creation of an off-site refuge for humpback chub. From the 2008 biological opinion:

*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. In case of a catastrophic loss of the Grand Canyon population of humpback chub, a humpback chub refuge will provide a permanent source of sufficient numbers of genetically representative stock for repatriating the species. This action would also be an important step toward attaining recovery.

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Relevant Science

√ The following describes the relevant research or monitoring on this subject:  
See the SCORE report at <http://www.gcmrc.gov/products/score/2005/score.htm>.

See Also:

Armstrong, D.P. and P.J. Seddon. 2007. Directions in reintroduction biology. *Trends in Ecology and Evolution* 23(1):20-25.

U.S. Fish and Wildlife Service. 2000. Policy Regarding Controlled Propagation of Species Listed Under the Endangered Species Act. *Federal Register* 96(183):56916-56922.

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Background Information

FWS, Arizona Game and Fish Department (AGFD), and the National Park Service (NPS) attempted to collect 900 juvenile humpback chub (50-120 mm) for several purposes, including the development of a refuge at Dexter Fish Hatchery. While several hundred fish were collected, there were not enough for the refuge.

The implementing agencies and the Bureau of Reclamation are currently considering a proposal to conduct an additional capture effort in the fall after the monsoon season. This effort could provide additional fish for translocation into Shinumo Creek as well as to establish a refuge at Dexter National Fish Hatchery, but will depend on whether flooding conditions have dissipated and if the targeted sizes of fish are available to capture efforts.

When enough fish are collected, they will be initially transported to Bubbling Ponds for quarantine, and then 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.

When the refuge at Dexter has been established, the Fish and Wildlife Service and Arizona Game and Fish Department, in cooperation with the Hualapai Tribe, propose an experiment to initiate spawning and rearing, and to satisfy other experimental needs with progeny of the refuge fish. F1 fish (offspring of wild fish) would be provided to Hualapai Tribe's Native Fish Facility to establish a refuge, provided the Tribe has completed necessary upgrades and implemented recommendations per the Hatchery Inspection in June 2008. These fish would be used for experimental purposes, including handling studies, temperature tolerances, and determining how to effectively hold fish in a refuge environment. The Hualapai Native Fish Facility would also potentially be used as a refuge site for wild fish. Funding for this effort would be requested through the GCDAMP budget process.

# Humpback Chub Refuge Development

- ◆ Conservation Measure from 2008 BO
- ◆ Create refuge populations of 1,000 fish at Dexter National Fish Hatchery and Hualapai Fish Facility.
- ◆ 207 humpback chub currently at Bubbling Ponds, could go to Shinumo Creek or Dexter National Fish Hatchery.



# Grand Canyon Humpback Chub at Bubbling Ponds



# Genetic Management Plan Update

