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U.S. Fish and Wildlife Service
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AESO/SE
02-21-03-F-0016 June 12, 2003

Memorandum

To: Regional Director, Bureau of Reclamation, Salt Lake City, Utah
Superintendent, Grand Canyon National Park, Grand Canyon, Arizona
Superintendent, Glen Canyon National Recreation Area, Page, Arizona
Chief, Grand Canyon Monitoring and Research Center, USGS, Flagstaff, Arizona

From: Field Supervisor

Subject: Reinitiation of Section 7 Consultation on Proposed Experimental Releases from Glen Canyon Dam and Removal of Non-native Fish

Thank you for the March 27, 2003, request from the Bureau of Reclamation (Reclamation) for reinitiation of formal consultation with the U.S. Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). The purpose of this reinitiation is to make a change to a conservation measure for humpback chub (*HBC; Gila cypha,*) that was part of the proposed action considered in the original biological opinion. The conservation measure originally consisted of translocation of 300 30-60 mm total length (TL) young-of-the-year humpback chub within the Little Colorado River (LCR) in Grand Canyon, from near the mouth of the LCR to a reach above Atomizer Falls, Coconino County, Arizona. Your request is to increase the size range of translocated humpback chub to 50-100 mm TL, to both reduce the potential for mortality of handling very small young-of-the-year fish (<40 mm), and allow marking of individuals with visible implant flourescent elastomer (VIE) tags to better evaluate the success of the conservation measure. In your memorandum you state that all other aspects of the proposed action would remain the same and refer to the Fish and Wildlife Service, Arizona Fishery Resources Office (AZFRO) proposal "Humpback chub translocation to Above Chute Falls" for a more detailed description of the conservation measure (Appendix B).

The original biological opinion, dated December 6, 2002, concerned the possible effects resulting from experimental flows from Glen Canyon Dam, and from mechanical removal of rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and other non-native fishes from the Colorado River from above and below the confluence of the LCR and the Colorado River. In the

original opinion, you determined that the proposed project was likely to adversely affect HBC and its critical habitat, the Kanab ambersnail (*Oxyloma haydeni kanabensis*), and the bald eagle (*Haliaeetus leucocephalus*). You also determined that the proposed project "may affect, but is not likely to adversely affect" the razorback sucker (*Xyrauchen texanus*) and its critical habitat, southwestern willow flycatcher (*Empidonax trailli extimus*), and the California condor (*Gymnogyps californianus*); concurrences for these species are provided in Appendix A of the biological opinion.

The joint leads for this project are Reclamation, Glen Canyon National Recreation Area and Grand Canyon National Park, and the U.S. Geological Survey's Grand Canyon Monitoring and Research Center (GCMRC).

This biological opinion was prepared using the September 2002 Environmental Assessment (EA), titled: "Proposed Experimental Releases from Glen Canyon Dam and Removal of Non-native Fish;" the December 6, 2002, biological opinion; telephone conversations; information provided by Reclamation and GCMRC staff; the AZFRO proposal "Humpback Chub Translocation to Above Chute Falls;" and our files. A complete administrative record for this consultation is on file in our office.

CONSULTATION HISTORY

- In our December 6, 2002, biological opinion, we found that the proposed action was not likely to jeopardize the continued existence of HBC, the Kanab ambersnail, and the bald eagle.
- On February 11, 2003, Pam Sponholtz of the AZFRO emailed the proposal "Humpback chub translocation to Above Chute Falls," to our office.

- On February 12, 2003, and April 24, 2003, representatives of the Fish and Wildlife Service, National Park Service, GCMRC, Reclamation, and other agencies conducted conference calls to discuss the AZFRO proposal.

- March 27, 2003, Reclamation requested reinitiation of formal consultation.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action remains the same as described in our December 19, 2000, biological opinion, with the exception of the following:

Conservation Measures

Original Action: For humpback chub, approximately 300 individuals between 30 and 60 mm will be removed from the LCR and Colorado River confluence and transported 9.3 miles upstream above Atomizer Falls in the LCR.

New Action: For humpback chub, in summer 2003, approximately 300 individuals between 50 and 100 mm will be removed from the lower LCR, marked with VIE tags, transported, and released upstream above the Atomizer Falls/Chute Falls complex (river mile 9.1). Methods will follow the AZFRO proposal, "Humpback chub translocation to Above Chute Falls" (Appendix B). A second translocation of 300 HBC, following the same methods, will be conducted in summer 2004. This conservation measure will be carried out by AZFRO under research permits, and, as the action would take place in part on lands of the Navajo Nation, only after approval from the Navajo Nation has been granted.

STATUS OF THE SPECIES

The status of the species remains the same as described in the 2002 biological opinion.

ENVIRONMENTAL BASELINE

The environmental baseline remains the same as described in the 2002 biological opinion. Research and monitoring continues, including experimental flows and non-native fish removal.

EFFECTS OF THE ACTION

The effects of the action remain the same as described in the 2002 biological opinion. The removal of slightly larger fish and use of VIE tags is not expected to result in any significant change to the population but is expected to result in greater survival rates for transplanted HBC and an improvement in the means to assess the effectiveness of the conservation measure (see Appendix B).

Cumulative Effects

Cumulative effects are those adverse effects of future non-Federal (State, local, government, and private) actions that are reasonably certain to occur in the project area. Future Federal actions would be subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed project. Effects of past Federal and private actions are considered in the Environmental Baseline. The analysis of cumulative effects remains unchanged from the 2002 biological opinion.

Conclusion

After reviewing the current status of the species, the effects of the proposed implementation of the experimental releases from Glen Canyon Dam and removal of non-native fish, the cumulative effects, and the environmental baseline, it is the FWS's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the humpback chub, Kanab ambersnail, and bald eagle. Critical habitat for the humpback chub will not be destroyed or adversely modified. No critical habitat is currently designated for the Kanab ambersnail and bald eagle, thus none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined (50 CFR CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described are non-discretionary, and must be undertaken by the action agencies so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The action agencies have a continuing duty to regulate the activity covered by this incidental take statement. If the action agencies (1) fail to assume and implement the terms and conditions or (2) fail to require field crews to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the action agencies must report the progress of the action and its impact on the species to the Fish and Wildlife Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

The amount or extent of take remains the same as described in the 2002 biological opinion.

EFFECT OF TAKE

The effect of take remains the same as described in the 2002 biological opinion.

REASONABLE AND PRUDENT MEASURES

The reasonable and prudent measures remain the same as described in the 2002 biological opinion.

TERMS AND CONDITIONS

The terms and conditions remain the same as described in the 2002 biological opinion.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 2450 West Broadway Road #113, Mesa, Arizona (telephone: (480) 967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact specimens of listed animal species shall be submitted to educational or research institutions holding appropriate State and Federal permits. If such institutions are not available, the information noted above shall be obtained and the carcass left in place.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution prior to implementation of the action. Injured animals should be transported to a qualified veterinarian by a qualified biologist. Should any treated listed animal survive, the Service should be contacted regarding the final disposition of the animal.

CONSERVATION RECOMMENDATIONS

The conservation recommendations remain the same as described in the 2002 biological opinion.

REINITIATION NOTICE

This concludes this reinitiation of formal consultation on the proposed action. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate your efforts to identify and minimize effects to listed species from this project. For further information please contact Glen Knowles (x233) or Debra Bills (x239). Please refer to the consultation number, 02-21-03-F-016 in future correspondence concerning this project.

/s/ Steven L. Spangle

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
Project Leader, Fish and Wildlife Service, Pinetop, AZ
Pam Sponholz, Fish and Wildlife Service, Flagstaff, AZ
Bruce Taubert, Arizona Game and Fish Department, Phoenix, AZ
Norm Henderson, National Park Service, Salt Lake City, UT
Director, Navajo Fish and Wildlife Department, Window Rock, AZ
Robert Begay, Navajo Nation, Window Rock, AZ
Jeff Cole, Navajo Nation, Window Rock, AZ
Director, Bureau of Indian Affairs, Phoenix AZ
San Juan Southern Paitue, Tuba City, AZ
Pueblo of Zuni, Zuni, NM
Havasupai Tribe, Supai, AZ
Hualapai Nation, Peach Springs, AZ
Southern Paiute Consortium, Fredonia, AZ
Hualapai Fish and Wildlife, Peach Springs, AZ
Hopi Nation, Kykotsmovi, AZ

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Appendix A: Concurrences

The concurrences remain the same as described in the 2002 biological opinion.

Appendix B:

Proposal: Humpback chub translocation to above Chute Falls

Background:
In the December 6, 2002 Biological Opinion (BO) on the proposed experimental releases from Glen Canyon Dam and removal of nonnative fish, a conservation action was identified by the U.S Bureau of Reclamation, GCMRC and the National Park Service to relocate small humpback chub, (*Gila cypha*, HBC) to upstream areas of the Little Colorado River to offset the potential impacts on chubs from the proposed project. The conservation action called to relocate HBC to perennial areas upstream in the Little Colorado River, to an area referred to as Chute Falls. Historically, HBC and other native fishes were dispersed throughout the Little Colorado River below Grand Falls, however, due to vegetation changes and flow modifications, the Little Colorado River is no longer perennial below Grand Falls. Flows in the LCR become perennial at Blue Springs, at river kilometer 21. Reduced water volume prevents dilution of highly saline springs like Blue Springs and causes free CO_2 levels to exceed fish tolerance levels. In the past, HBC have been found just below Chute Falls at river kilometer 14.5 (Mattes 1993). More recently, HBC have only been found further downstream, below the complex of travertine dams known as the Atomizer Falls complex (USFWS, unpublished data). Experimental transplants of native fishes at river kilometer 15, 17.5 and 20 found that stress behaviors were apparent at river kilometer 20 but that other, more downstream locations appeared to provide suitable conditions (Robinson et. al. 1996). CO_2 concentrations below river kilometer 17.5-river (196mg/L in Robinson's study and Mattes 1993) are likely below the critical tolerances for HBC and may provide additional rearing habitat during some seasons.

Objectives:
The short-term objective of this project would address the question of whether or not transplanted fish would remain above Chute Falls. Geomorphology of this section of the LCR includes narrow, canyon bound stretches subject to scouring flows. Small life history stages of HBC may not be able to maintain position in high flows and be washed downstream. Yet despite these conditions, native speckled dace have maintained a population above Chute Falls for many years. However, if lower volume flows and baseflow conditions occur over the 2003 and 2004 seasons, HBC may be able to exploit available habitat and remain in this upstream section until they reach larger sizes. The second objective of this project is a direct management action to try and diminish the large-scale loss of young of the year and year 1HBC. Data suggest that once smaller life history stages enter the Colorado River either through high flows or downstream drift, that a combination of cold temperatures and predation significantly reduce recruitment. It appears that once HBC exceed the 150-200 size range that survival significantly increases. If HBC can remain in the LCR longer to reach these larger size classes, they may have an increased chance of survival once they enter the mainstem Colorado. Since food resources do not appear to

be limiting (Robinson 1996) and warmer temperatures exist as compared to the mainstem Colorado, the longer they remain in the LCR, the higher the likelihood of surviving until adulthood. The longer-term objective of this project is the establishment of a spawning population above Chute Falls. This situation would require the relocated fish to remain in this section for approximately 3-4 years before they reached sexual maturity. Although this situation is unlikely due to the high flows in the LCR and the canyon bound areas above Chute Falls, genetic considerations would need to be explored should survival rates of translocated fish create a spawning population. Since the LCR is the first place to try this approach, we expect that results of this project could eventually be applied to other tributaries to build a larger HBC population in the mainstem Colorado.

Methods:

A reconnaissance-level trip will be performed in June 2003 to assess water quality (CO_2, pH, temperature, turbidity), densities of nonnative fishes and to determine potential helicopter landing/sling loading areas for subsequent fish transfer above Chute Falls. Capture methods used will include seining, minnow traps and snorkeling surveys. Although water quality above the Atomizer Falls Complex has been adequately documented (Mattes 1993, Robinson et. al 1996, Strength 1997), we propose to obtain limited samples to ensure water quality conditions for subsequent fish release.

In July 2003, USFWS biologists (3) will be taken to the lower end of the Little Colorado River at Boulder's Camp to obtain approximately (300) 50-100mm HBC. Near the confluence of the Colorado River, HBC are most vulnerable to being washed into the mainstem and long-term survival is reduced. Fish will be individually marked using elastomer tags so that monitoring efforts can detect movement of translocated fish into areas downstream of Chute Falls. The minimum size that HBC can be elastomer marked is approximately 50mm total length. Due to the limited number of fish being moved, every opportunity to detect fish movement downstream and be able to identify translocated individuals needs to be pursued. In addition, Robinson (1996) found between 20-30% mortality of age-0 fish (26-40mm) during cage experiments at river kilometer 15 and 12.5 suggesting some handling induced mortality from transport. Mortality was reduced to 0% when age-1 fish (40-100mm) were used. Larger size classes may increase survival in transplanted sections.

Capture methods used will include seining, minnow traps and hoop nets. Since it is unknown how long it will take to capture this many HBC within the specific size class, logistics of subsequent helicopter contact and transport will have to be further developed. Due to the warm ambient air temperatures in the LCR during summer, all capture efforts will be conducted during early morning and late afternoon to reduce stress and mortality of captured fishes. Captured fish will be measured for length, and implanted with an elastomer tag with a unique color. To minimize stress induced handling while elastomer tags are inserted, anesthesia such as MS222 may be used. Pending approval by the Navajo Nation, all captured nonnative fishes will be sacrificed. All other fishes will be returned to point of capture. All captured HBC will be held in 1/8 mesh live cars until transport upstream. Fish will be transported to the release site in an aerated tank or cooler stored within the helicopter. At the release site, fish will be tempered both

for temperature and CO_2 levels until differences between parameters are within 1 mg/l and 1˚C. Following tempering, translocated fish will be held in live cars at several locations in the LCR between river kilometer 15 and 17.5. At each location fish will monitored for stress and mortality for a minimum of 24 hours. Following 24 hours of monitoring, fish will be released into the LCR.

Monitoring of released fish will occur in November 2003 for 5 days to determine whether or not any retention above Chute Falls has occurred. Capture methods used will include seining, minnow traps baited hoop nets and snorkeling. Captured HBC will be measured for length and if they exceed 150 mm total length, be implanted with a pit tag. In addition, USFWS population estimate trips will occur in September and October 2003 as well as in spring 2004 and could potentially capture transplanted fish during sampling along the lower 14 kilometers. Unique identification via elastomer tags will provide insight as to how many fish were transported downstream during the 2-3 month time frame. An interim report will be submitted by December 31, 2003 that summarizes the June 2003 reconnaissance trip, July 2003 translocation trip and November 2003 monitoring efforts. This report can then be used to determine subsequent levels of effort and size classes based on initial effort in 2003.

To evaluate how transplanted fish persist following winter flows, monitoring of transplanted fish will occur in late spring 2004. To reduce handling effects on fish, spring monitoring will consist of snorkeling surveys as the primary method to assess presence/absence of transplanted fish. Other methods such as baited minnow traps and seines may be used should turbid water conditions exist during spring monitoring efforts. In June/July 2004, an additional translocation trip will occur using similar methods as described above. Monitoring will occur to assess post monsoon survival in November 2004. The specific date will depend on when the spring 2004 spawn occurred for HBC. An interim report will be submitted by December 31st 2004 that summarizes the spring 2004 monitoring, June/July 2004 translocation trip and the 2004 November monitoring.

Final monitoring will occur in spring 2005, followed by a final report that will be submitted in June 2005. The final report will include a synthesis of all translocations, monitoring efforts and recommendations for future action.

Timeline:
June 2003:Reconnaissance survey to collect water quality, nonnative fish densities and helicopter staging areas, 5 days
July 2003: Translocation trip at confluence of LCR and mainstem Colorado, 3-5 days
November 2003: Post monsoon monitoring trip, 5 days
December 31, 2003: Interim 2003 Report due
Spring 2004: Post winter flow monitoring (snorkeling surveys), 5 days
June/July 2004: Translocation trip at confluence of LCR and mainstem Colorado, 2-5 days
November 2004: Post monsoon monitoring, 5 days
December 31, 2004: Interim 2004 Report Due
Spring 2005: Post winter flow monitoring (snorkeling surveys), 5 days
June 2005: Final report due

Literature Cited

Mattes, W.P. 1993. An evaluation of habitat conditions and species composition above, in and below the Atomizer Falls complex of the Little Colorado River. The University of Arizona. 105pp.

Robinson, A.T., D.M. Kubly, R.W. Clarkson, and E.D. Creef. 1996. Factors limiting the distributions of native fishes in the Little Colorado River, Grand Canyon, Arizona. The Southwestern Naturalist. 41: 378-387.

Strength, D.A. 1997. Travertine deposition in the Little Colorado River, Arizona and habitat for the endangered humpback chub. Northern Arizona University. 99pp.