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In Reply Refer To:

AESO/SE

02-21-04-F-0109-R1

November 7, 2006

Memorandum

To: Superintendent, Grand Canyon National Park, Grand Canyon, Arizona

From: Field Supervisor

Subject: Biological Opinion for Reinitiation of Formal Consultation on the Bright Angel Trout Reduction Project in Grand Canyon National Park

This biological opinion responds to your request for reinitiation of consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your September 6, 2006, request for reinitiation of formal consultation was received on September 14, 2006. The request was further modified with an October 12, 2006, email message. At issue are impacts that may result from the proposed Bright Angel Creek Trout Reduction Project in Grand Canyon National Park (Park) located in Coconino County, Arizona, on the threatened bald eagle (*Haliaeetus leucocephalus*), and endangered humpback chub (*Gila cypha*).

In an appendix to the original June 24, 2004, biological opinion for the proposed action, we concurred that the project is not likely to adversely affect the California condor (*Gymnogyps californianus*). We still concur with that determination of effect for the reasons stated in the appendix to this biological opinion.

This biological opinion is based on information provided in an August 2006 environmental assessment/assessment of effect, as well as a December 16, 2003, biological assessment amendment, telephone conversations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, construction and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

Consultation History

Table 1 is a summary of the consultation history for the proposed project.

Table 1. Consultation history for the Bright Angel Creek Trout Reduction Project in Grand Canyon National Park.

<i>Date</i>	<i>Event</i>
December 29, 2003	We received a December 16, 2003, biological assessment and request for concurrence with a “not likely to adversely affect” determination for the humpback chub, California condor, and bald eagle.
February 9, 2004	We received an email message containing additional information regarding the humpback chub and a request for formal consultation for the bald eagle.
March 2, 2004	We issued a draft biological opinion.
June 21, 2004	The Park confirmed that no changes to the draft biological opinion were necessary.
June 24, 2004	We issued a biological opinion for the proposed action.
September 14, 2006	We received a September 6, 2006, request to reinstate formal consultation on the proposed action.
November 6, 2006	We issued a draft biological opinion.
November 7, 2006	The Park recommended minor modifications to the draft biological opinion which were incorporated into the final.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Most of the information regarding the proposed action in this document is from the August 2006 Environmental Assessment/Assessment of Effect (EA; Grand Canyon National Park 2006). The project is intended to reduce the non-native trout population in Bright Angel Creek.

The project was originally proposed to occur from the winter of 2004 through January 2007 (Ward 2003). The project now will begin in November 2006 and continue for five years (Grand Canyon National Park 2006). Beginning as early as November 2006, a weir will be installed in November of each year and operated for approximately 70-86 consecutive days throughout the trout spawning season (November-January). At the end of each spawning season, the weir will be removed. The weir will be located in Bright Angel Creek downstream from Phantom Ranch near the footbridge by the Park river ranger station. The reduction efforts will continue for five years with annual monitoring and evaluation of the project.

The weir will be operated to capture all large-bodied fish moving upstream. Only qualified biologists will handle and tag fish. All captured fish will be identified to species, counted, measured, inspected for reproductive condition, and scanned for the presence of PIT (passive integrated transponder) tags. Untagged native fish will be injected with a PIT tag. Native fish will be released above the weir, but all trout will be euthanized. The non-native fish carcasses will be preserved and transported out of the Park.

At least one biologist will be present at all times during weir operation to: (1) ensure that the weir is operating properly; (2) check and remove fish from the trap as frequently as necessary; (3) clear away accumulated debris; (4) ensure that no other wildlife or non-target fish species are negatively affected by the weir; (5) remove the weir if a flooding event or safety issue occurs; and (6) answer any inquiries from park visitors regarding the project.

To determine the effects of trout reduction on the fish community in Bright Angel Creek, population changes in that community will be monitored annually. Two methods will be used. First, population estimates of fish species present in the creek will be determined using electrofishing and the depletion survey method. The population surveys will require multiple consecutive passes of defined reaches of stream using a backpack electrofisher. The number and locations of reaches have not yet been determined, but initial efforts will be focused between the mouth of Bright Angel Creek and the confluence with Phantom Creek. The surveys will include two five-day sessions in November-January, one five-day session in spring, and one five-day session in summer. The summer survey will also include hoop-netting. Fish will be handled and all untagged native fish other than speckled dace will be injected with a PIT tag. Native fish will be returned to the creek, and all trout and other non-native fish will be euthanized and removed.

Second, the weir will be operated during the spring season to capture and census native flannelmouth and bluehead suckers moving in to Bright Angel Creek to spawn. For 45 days, from late March to mid-May, all large-bodied fish moving upstream will be captured in the weir. Captured fish will be processed as described above.

Conservation Measures

The Park has developed several measures that will be implemented as part of the proposed project to reduce the potential for adverse effects (Grand Canyon National Park 2006). The measures that relate particularly to the bald eagle and humpback chub include:

- Biologists and biological technicians will be instructed to refrain from interacting with any eagles that may be present.
- If an eagle is observed in the area, biologists and technicians will note its behavior and report it to the Park biologist.
- All fish will be disposed of in such a manner as to avoid creating an attractant to eagles.
- Standard fish-handling and electrofishing measures will be implemented to reduce stress and injury to fish.

- Captured humpback chub will be released upstream of the weir after scientific processing.

STATUS OF THE SPECIES

Bald Eagle

The bald eagle south of the 40th parallel was listed as endangered under the Endangered Species Preservation Act of 1966, on March 11, 1967 (U.S. Fish and Wildlife Service 1967), and was reclassified to threatened status on July 12, 1995 (U.S. Fish and Wildlife Service 1995). No critical habitat has been designated for this species. The bald eagle was proposed for delisting on July 6, 1999 (U.S. Fish and Wildlife Service 1999). The bald eagle is a large bird of prey that historically ranged and nested throughout North America except extreme northern Alaska and Canada, and central and southern Mexico.

The bald eagle occurs in association with aquatic ecosystems, frequenting estuaries, lakes, reservoirs, major river systems, and some seacoast habitats. Generally, suitable habitat for bald eagles includes those areas that provide an adequate food base of fish, waterfowl, and/or carrion, with large trees for perches and nest sites. In winter, bald eagles often congregate at specific wintering sites that are generally close to open water and offer good perch trees and night roosts (U.S. Fish and Wildlife Service 1995).

In addition to breeding bald eagles, Arizona provides habitat for wintering bald eagles, which migrate through the state between October and April each year. In winter, bald eagles often congregate at specific wintering sites that are generally close to open water and offer good perch trees and night roosts (U.S. Fish and Wildlife Service 1995). In 2005, the standardized statewide Arizona winter count totaled 224 bald eagles, including 153 adults, 56 subadults, and 16 of unknown age. The highest number of bald eagles occurred on Lake Mead, Temple Bar (n=25). An additional 21 bald eagles were counted on non-standardized routes (Jacobson *et al.* 2005). Of the 115 standardized routes, Arizona completed 97. This matches the 1997 and 1998 surveys for the least routes completed. The 97 standardized routes completed and the total 224 bald eagles counted were below average (average 332 bald eagles since survey routes were standardized in 1995) and are directly correlated to the wet weather conditions experienced in the first two weeks of January (Jacobson *et al.* 2005).

Even though the bald eagle has been reclassified to threatened, and the status of the birds in the Southwest is on an upward trend, the Arizona population remains small and under threat from a variety of factors. Human disturbance of bald eagles is a continuing threat which may increase as numbers of bald eagles increase and human development continues to expand into rural areas (U.S. Fish and Wildlife Service 1999). The bald eagle population in Arizona is exposed to increasing hazards from the regionally increasing human population. Because water is a scarce resource in the Southwest, recreation is concentrated along available watercourses. Some of the continuing threats and disturbances to bald eagles include entanglement in monofilament fishing line and fishing tackle; overgrazing and related degradation of riparian vegetation; malicious and accidental harassment, including shooting, off-road vehicles, recreational activities (especially watercraft), and low-level aircraft overflights; alteration of aquatic and riparian systems for water

distribution systems and maintenance of existing water development features such as dams or diversion structures; collisions with transmission lines; poisoning; and electrocution (Stalmaster 1987).

Humpback Chub

The humpback chub (*Gila cypha*) was listed as endangered on March 11, 1967 (32 FR 4001). Critical habitat for humpback chub was designated in 1994 (59 FR 13374). The humpback chub is a medium-sized freshwater fish (to about 20 inches) of the minnow family, Cyprinidae. The adults have a pronounced dorsal hump, a narrow flattened head, a fleshy snout with an inferior-subterminal mouth, and small eyes. It has silvery sides with a brown or olive-colored back.

The humpback chub is endemic to the Colorado River Basin and is part of a native fish fauna traced to the Miocene epoch in fossil records (Miller 1955; Minckley *et al.* 1986). Humpback chub remains have been dated to about 4000 B.C., but the fish was not described as a species until the 1940's (Miller 1946), presumably because of its restricted distribution in remote white water canyons (U.S. Fish and Wildlife Service 1990). Because of this, its original distribution is not known. Populations of this species occur in the Little Colorado (LCR) and Colorado Rivers in the Grand Canyon, Black Rocks area of the Colorado River, Westwater Canyon, Cataract Canyon, Desolation/Grey Canyon, and Yampa Canyon (Valdez and Clemmer 1982, U.S. Fish and Wildlife Service 1990). A 2003 report (Humpback Chub Ad Hoc Committee 2003) indicated the following sizes of six populations: Yampa Canyon, 400 individuals; Desolation/Gray Canyon, 1,500 (in 2001) and 1,700 (in 2002); Black Rocks Canyon, 1,000; Westwater Canyon, 2,200-4,700; Cataract Canyon, 500; and Grand Canyon, 2,000-4,000.

The Grand Canyon population of humpback chub is the only successfully reproducing population in the lower Colorado River basin (Kaeding and Zimmerman 1983, Valdez and Ryel 1995). Causes for the decline of humpback chub in Grand Canyon likely include temperature; infestation of Asian tapeworm; predation by or competition with warm-water non-native catostomids, ictalurids, cyprinids, and cold-water salmonids; and the hydrology of the regulated Colorado River.

A 2003 report (Humpback Chub Ad Hoc Committee 2003) stated that recent analyses of humpback chub in Grand Canyon have caused considerable concern due to uncertainties about the current size of the population and the strong probability that the population has been declining for at least a decade. The report stated that the most recent (at the time) assessment indicates that the spawning population is probably somewhere between 2,000 and 4,000 age-4 and older. It also reported that a different method, using the 'Supertag' assessment model, resulted in an estimate of 1,100-1,200 adults in 2001. Estimates of the LCR spawning population for 1992-95 were 2,000-4,700 adults. The assessment model also determined a lower level of recruitment (fish reaching maturity at age-4) over the last decade. If recruitment continues to be stable at an average of the 1995-98 rate, the population will likely stabilize at 1,000-3,000 adults.

A stock assessment of the humpback chub in the LCR was conducted in 2004 (Van Haverbeke 2005). Mark-recapture efforts indicate that there were 2,334 humpback chub (greater than 150 mm in total length) during the spring of 2004. That total included an estimate of 1,816

individuals that were 200 mm in length (four-year-old adults). The results of the fall mark-recapture effort indicate that there were 2,565 individuals including 796 adults.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Bald Eagle

A. Status of the species within the action area

Three (Nankoweap Creek, Bright Angel Creek, and Twin Overlooks) confirmed winter roost areas are known within Park boundaries. Bald eagles are known to concentrate occasionally along Colorado River tributaries where rainbow trout spawning occurs. Bald eagles have concentrated at Nankoweap Creek at river mile 52 since the early 1980s. Monitoring of wintering bald eagles along the upper Colorado River corridor within Grand Canyon from 1991 to 1995 resulted in counts ranging from 2 to 24 individuals. A single adult bald eagle occurs regularly in the winter along Bright Angel Creek. It roosts in riparian habitat along a 0.25 mile portion of the creek between the campground and the development at Phantom Ranch. An adult bald eagle has been observed at Twin Overlooks, roosting occasionally in pine snags adjacent to the Twin Overlooks parking area and East Rim Drive.

B. Factors affecting the species' environment within the action area

Previous actions have included construction of a new bunkhouse at Phantom Ranch which occurred during the time the bald eagle was present. There are no planned construction projects in the vicinity of Nankoweap Creek or the Twin Overlooks bald eagle wintering areas. Projects proposed for the Phantom Ranch area include Bright Angel Campground Restroom Rehabilitation, Phantom Ranch Ranger Station Rehabilitation, and Phantom Ranch Restroom Rehabilitation. Those projects focus primarily on the interior and exterior of buildings and would not require construction equipment. No disturbance of existing vegetation would occur. The work is not expected to result in significantly higher-than-average noise levels in the area. Implementation of a proposed Upgrade Corridor Area Fire Protection Project (02-21-02-F-0462) at Phantom Ranch is an action that will affect the species at that location.

Humpback Chub

A. Status of the species within the action area

Ten aggregations of the species have been identified in Grand Canyon. The largest are in the LCR and the mainstem Colorado River near the LCR inflow (Grand Canyon National Park 2006). A small aggregation is located in the Bright Angel Creek inflow area (River Mile [RM]

83.8-92.2). One record (“near Phantom Ranch”) of humpback chub is known for Bright Angel Creek, but Miller (1946) presumed the fish was caught in the Colorado River at or near the mouth of Bright Angel Creek.

B. Factors affecting the species’ environment within the action area

The Humpback Chub Ad Hoc Committee (2003) identified flow regimes from dam releases, water temperature, predators, hazardous materials spills, and parasites as the immediate threats to humpback chub in Grand Canyon. Many of the past and current threats to the humpback chub in Grand Canyon are related to the presence and operation of Glen Canyon Dam (Humpback Chub Ad Hoc Committee 2003). Extreme daily flow fluctuations destabilize habitat, especially for young fish. High summer/fall base flows inundate juvenile rearing habitat. Cold hypolimnetic releases inhibit egg hatching and larval survival. Cold water temperatures cause thermal shock of fish less than 50 mm in total length descending from seasonally-warmed tributaries. Cold water temperatures enhance reproduction/survival of trout which are predators of humpback chub. Scientific studies and recreation also affect humpback chub. Repeated capture and marking (PIT tagging) may lead to mortality.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Bald Eagle

The proposed action would not result in any direct modification of winter roosting or foraging habitat. However, the action could result in a reduction of the food supply for the wintering bald eagle at Bright Angel Creek. Trout as a food source for eagles would decrease in Bright Angel Creek. Some trout would continue to be available below the weir, but perhaps in decreasing numbers each year. Although the usual foraging behavior of the individual is not known, it is likely that the eagle winters at Bright Angel Creek at least partially because of the spawning activity of the non-native trout that occur there. In addition, human activity resulting from the implementation of the proposed action may disturb the normal foraging behavior of the wintering eagle in the area.

Humpback Chub

Although the likelihood of capturing or electrofishing humpback chub may be relatively low, the possibility exists. Capture, handling, electrofishing, and tagging such individuals would not only be adverse effects; capture and handling could also result in injury or death of individuals.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The action area occurs entirely on Federal land, and therefore non-Federal actions are likely to be minimal. Private actions that are likely to occur within the action area include various forms of recreation such as hiking and camping.

CONCLUSION

After reviewing the current status of the bald eagle and humpback chub, the environmental baseline for the action area, the effects of the proposed project in Grand Canyon National Park and the cumulative effects, it is our biological opinion that the Bright Angel Creek Trout Reduction Project in Grand Canyon National Park, as proposed, is not likely to jeopardize the continued existence of the bald eagle and humpback chub.

We present this conclusion for the following reasons:

1. Only a small number of wintering bald eagles may be affected by the proposed action, and no modification of bald eagle roosting habitat will occur.
2. Very few humpback chub are anticipated to be affected and incidentally taken as a result of the proposed action.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

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 defined 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 (50 CFR 17.3). "Harass" is defined 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 (50 CFR 17.3). "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.

AMOUNT OR EXTENT OF TAKE

Bald Eagle

We do not anticipate the proposed action will incidentally take any bald eagles.

Humpback Chub

We anticipate that an unknown, but low, number of humpback chub may be incidentally taken due to capture, handling, electrofishing, and tagging. If one humpback chub sustains obvious permanent injury or is killed during the action, then anticipated incidental take will be considered to have been exceeded.

REASONABLE AND PRUDENT MEASURES WITH TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the Park must comply with the following terms and conditions, which implement the reasonable and prudent measures and outline reporting/monitoring requirements. The terms and conditions are non-discretionary.

Humpback Chub

The following reasonable and prudent measure and terms and conditions are necessary and appropriate to minimize take of humpback chub.

1. The Park will take measures to reduce, determine, and report the actual impact of the proposed action on the humpback chub:
 - A. All humpback chub individuals that are captured during the project will be released otherwise unharmed after scientific processing.
 - B. During implementation of the project, the Arizona Ecological Services Office will be notified if humpback chub individuals are captured.
 - C. If capture and handling of humpback chub results in observed injury or death of an individual, the Arizona Ecological Services Office will be notified immediately.
 - D. If individuals of humpback chub are captured during implementation of the project, an annual report describing the occurrence and scientific processing will be provided to the Arizona Ecological Services Office by July 1 of each year.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species, initial notification must be made to our Law Enforcement Office, 2450 West Broadway Road, Suite 113, Mesa, Arizona 85202 (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 sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the Park provide our Flagstaff Suboffice with all existing and any future documentation regarding the occurrence of bald eagles in Grand Canyon National Park.
2. We recommend that the Park provide our Flagstaff Suboffice with all data, particularly regarding bald eagle behavior, collected during the implementation of the project.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request. 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 Grand Canyon National Park's efforts to identify and minimize effects to listed species from this project. For further information, please contact Bill Austin (928) 226-0614 (x102) or Brenda Smith (x101). Please refer to the consultation number, 02-21-04-F-0109-R1, in future correspondence concerning this project.

/s/ Steven L. Spangle

cc: Director, Science Center, Grand Canyon National Park, Grand Canyon AZ

Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix AZ

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APPENDIX A - CONCURRENCE

This appendix contains our concurrence with your “may affect, not likely to adversely affect” determinations for California condor.

California condor (*Gymnogyps californianus*)

We concur with your determination that the proposed project may affect, but is not likely to adversely affect, the California condor. We base this concurrence on the following conservation measures that are part of the proposed action:

- 1) If a California condor occurs within 300 feet of the project site, activity will cease until the bird(s) leave on their own, or until approved techniques are employed by permitted personnel that result in the birds leaving the area.
- 2) Biologists and biological technicians will be instructed to refrain from interactions with condors and to immediately contact appropriate Park personnel if condors occur at the site.
- 3) All fish will be disposed of in a manner that will avoid creating an attractant to condors.
- 4) The project site will be cleaned up at the end of each workday to minimize the likelihood of condors visiting the site.