



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES
3616 W. Thomas, Suite 6
Phoenix, Arizona 85019

2-21-91-F-331

July 17, 1991

MEMORANDUM

TO: Regional Director, National Park Service, San Francisco, California

FROM: Field Supervisor

SUBJECT: Biological Opinion - Issuance of a Permit to Dr. Wayne Starnes, Smithsonian Institution, to Collect Humpback Chub in the Grand Canyon National Park, Coconino County, Arizona

Introduction

This responds to your request dated June 13, 1991, for formal consultation pursuant to the Endangered Species Act of 1973 (Act), as amended, on the proposed issuance of a National Park Service (NPS) permit to Dr. Wayne Starnes, Smithsonian Institute, and personnel under his direction as Project Manager of the Gila Taxonomy Project (Project), to collect endangered humpback chubs (Gila cypha) in the Colorado River and Little Colorado River, Grand Canyon National Park (Park). The following biological opinion is based upon information provided by Dr. Starnes in his technical proposal, data in Fish and Wildlife Service (FWS) files, and discussions with biologists knowledgeable about the species.

Biological Opinion

It is my biological opinion that the issuance of the proposed NPS permit to Dr. Starnes and Project personnel is not likely to jeopardize the continued existence of the humpback chub but will promote the conservation of the species.

Background Information

Species Description

The humpback chub was listed as endangered by the FWS on March 11, 1967. No critical habitat has been designated for the species. The humpback chub is one of the "big river" fish endemic to the Colorado River Basin that has become very reduced in abundance and occurrence. The species is currently found in the Colorado, Little Colorado, Green, and Yampa Rivers. The Grand Canyon population of the Colorado River and Little Colorado River is the largest. The humpback chub is currently in decline. This decline may be due to a combination of factors such as: stream alteration (dams, irrigation, dewatering, channelization, habitat fragmentation), competition with and predation by introduced nonnative fish species, and pollution.

The humpback chub was described from a specimen taken in the Grand Canyon of the Colorado River and two other specimens of unknown origin (Miller 1946). The humpback chub is a medium-size (less than 500 mm total length [TL]), freshwater fish of the minnow family (Cyprinidae). Adults generally have a pronounced dorsal hump (Minckley 1973). Further description of the humpback chub can be found in the recently revised Recovery Plan for the species (FWS 1990).

However, the Recovery Plan also identified the following problem:

Taxonomic status of the humpback chub has been questioned, largely due to lack of definition of ontogenetic and interspecific variation between and among taxa. Genetic relationships among populations are unknown. Hybridization between humpback chub and other Colorado River basin Gila may be occurring. Morphological studies to date have failed to resolve these issues satisfactorily.

Action Description

The purpose of this permit is to allow the collection of tissue samples and morphologic data on humpback chub in the Park. The collections will began July 1991 and are scheduled to continue through summer 1993. The Project will be collecting this information throughout the Colorado basin for the Colorado River Recovery Implementation Program and as part of the endangered and native fish studies identified by an interagency consultation team for Glen Canyon Dam as one of the conservation measures that would lead to the protection and recovery of the species.

Hoop and trammel nets, seines, and electrofishing will be used to capture the fish. All humpback chub will be weighed and measured. Released humpback chub 150 mm TL or longer will be tagged with a Passive Integrated Transponder (PIT). Sampling, holding, and data collection techniques for the Project have been reviewed by agencies and individuals interested in the species' well-being. From that information, a Sampling Protocol was prepared by the Project Manager.

Non-lethal tissue samples will be taken from up to 50 adult humpback chub as directed in the Sampling Protocol. Tissue samples may also be taken from other humpback chub specimens captured and killed by other permitted researchers as a result of incidental mortality or purposeful take. In addition, up to 10 humpback chubs 75 mm or less TL may be taken and frozen for further taxonomic analysis.

Principle investigators for this permit are Drs. Wayne Starnes (Project Manager), M. Douglas (morphology), M. Kaliszewski and S. Seyoum (DNA), and D. Morizot (protein electrophoresis).

In addition to the NPS permit, Project personnel will also need a scientific collecting permit from Arizona Game and Fish Department (AGFD). A permit from the Navajo Nation will also be necessary if specimens are collected in reaches of the Little Colorado River in their jurisdiction. The endangered species permit from the FWS was obtained July 5, 1991, from our Denver Regional Office.

Impacts of the Action

Environmental Baseline

The Colorado River in the Grand Canyon has been physically modified by Glen Canyon Dam and by the introduction of nonnative fishes beginning in the late 1800's (Gilbert and Scofield 1898). A jeopardy biological opinion in 1978 on the effects of Glen Canyon Dam on the humpback chub recommended that studies should be conducted to find alternatives that would remove the threat of jeopardy to the humpback chub and lead to the recovery of the species.

Studies in the Park, such as Suttkis and Clemmer (1977), Kaeding and Zimmerman (1983), and Maddux et al. (1987), have contributed to the taxonomic and other knowledge of the humpback chub. In the 1983 study referenced above, the FWS collected data on the species' morphology and estimated an adult (TL greater than 200 mm) humpback chub population in the Little Colorado River of 7,000 to 8,000 individuals. Preliminary estimates from AGFD's mark and recapture surveys (May 1987 through 1989) suggest 5,000 to 18,000 humpback chubs use the Little Colorado River in the spring season (AGFD 1990). Estimates of the total Grand Canyon population of humpback chub are unknown.

Direct and Indirect Effects of the Proposed Action

The proposed action is expected to have a positive effect on the survival and recovery of the humpback chub. Issuance of the proposed permit for research activities on the humpback chub in the Park will contribute to the following tasks identified in the species' recovery plan (FWS 1990):

1. Resolve taxonomic problems in Colorado River basin Gila.
31. Determine genetic and morphologic composition of humpback chub populations.

Capturing, handling, collecting morphological data, removing tissue samples, and tagging of humpback chubs, while not expected to produce mortality (except for the 10 purposefully taken specimens), will cause some injury and stress, disruption of normal behavior patterns, and local disturbance of habitat due to placement and operation of nets. Stress will be reduced by minimizing the time fish are restrained in the nets, and utmost care will be employed in processing the fish, taking the tissue samples, and administering the PIT tags.

Because this study will be conducted in conjunction with study efforts by the AGFD, Arizona State University, BIO/WEST, and FWS, coordination and cooperation among the various research groups will be essential to the reduction of stress and adverse effects on the fish populations of the Park. Whenever possible, the Project will use the above research groups ongoing sampling regimes to collect the humpback chub. Tissue or specimens required should be taken from specimens they are permitted to take.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered and threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in Section 7 of the Act and, therefore, are not considered cumulative to the proposed action.

The FWS does not anticipate occurrence of non-Federal activities that would effect the humpback chub in the Park. Activities in the reach of the Little Colorado River above the Park that may effect the species are catastrophic or chronic events, such as a contaminant spill, and the FWS has not quantified that potential occurrence.

Incidental Take

Section 9 of the Act prohibits any taking (harass, harm, hurt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) of any listed species without a special exemption. Under the terms of Section 7(b)(4) and 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered taking within the bounds of the Act provided that such taking is in compliance with the incidental take statement.

Although mortality of humpback chub exceeding the take limit specified above as a result of activities associated with the proposed permit is not expected to occur, some incidental mortality may be experienced during period of the proposed permit. Incidental take has been estimated from previous experiences employing similar collecting gear.

Based upon review of the permit request and study proposal, the FWS anticipates that up to two humpback chub mortalities could occur in the Park during the period of the permit.

The FWS believes the following reasonable and prudent measures are necessary and appropriate to minimize take:

1. Measures shall be taken to minimize harm to humpback chubs by any Project related activity.
2. Reports of Project field activities will be prepared, and the FWS will use these reports and results of the other permit reviews to further evaluate the Sampling Protocol over the duration of the multi-year study.

In order to be exempt from the prohibitions of Section 9 of the Act, the following terms and conditions must be complied with in order to implement the above measures:

1. The Project manager will ensure that all fish collecting, sampling, and tagging crews are adequately trained for such activities as detailed in the Sample Protocol.
2. The Sample Protocol will be followed by Project personnel so that handling of humpback chub is accomplished in a manner that reduces stress, injury, or harm to species.
3. Project reports by trip (if possible), or annually, shall be prepared by the applicant and sent to the FWS (Field Supervisors in Phoenix, address on first page, and Salt Lake City, address on FWS permit) and other entities, as appropriate. Observations of any adverse effects or unusual condition of the humpback chubs encountered shall be included in the report. The FWS will conduct a review of this permit with the applicant by November 15, 1991. Methods or techniques that would reduce adverse study impacts related to the issuance of this permit for the humpback chub will be solicited from Project personnel and other researchers. As necessary, these recommendations will be incorporated as a permit amendment or included in future permits.
3. Upon location of a dead, injured, or sick humpback chub, not a part of Project activities, or an individual that will be included as incidental take described above, notification must be made to the above listed Field Supervisors. Care must be taken in handling sick or injured humpback chubs to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state.

If, during the course of the action, the amount of take or extent of the incidental take limit is exceeded, the NPS must reinitiate Section 7 consultation immediately to avoid violation of Section 9. Operations must be stopped in the interim period between initiation and completion of the new consultation if it is determined that the impact of the additional taking will cause an adverse impact on the species, as per Section 402.14(i). An explanation for the causes of the taking should be provided.

Conclusion

This concludes formal consultation on this action. Reinitiation of formal consultation is required if the amount or extent of incidental take is exceeded, if new information reveals effects of the action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion, if the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion, or if a new species or critical habitat is designated that may be affected by this action.

If we can be of further assistance, please contact Frank Baucom or me (602/261-4720 or FTS 261-4720).



Sam F. Spiller

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