



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

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

2-21-91-F-009

December 27, 1990

MEMORANDUM

TO: District Manager, Bureau of Land Management, Phoenix, AZ

FROM: Acting Field Supervisor

SUBJECT: Biological Opinion, Mesquite Spring Rehabilitation and Supplemental Desert Pupfish Stocking

This responds to your request of October 9, 1990, for formal consultation pursuant to Section 7 of the Endangered Species Act (Act) of 1973, as amended, on rehabilitation of aquatic habitat at Mesquite Spring, Pinal County, Arizona and supplemental stocking of desert pupfish (Cyprinodon macularius). The species of concern is the endangered desert pupfish. The 90-day consultation period began on October 11, 1990, the date your request was received in our office.

The following biological opinion is based on information provided in the October 9, 1990 biological assessment, data in our files, and other sources of information.

BIOLOGICAL OPINION

It is my biological opinion that implementation of the proposed rehabilitation of aquatic habitat, exclosure fence construction, and restocking with desert pupfish at Mesquite Spring are not likely to jeopardize the continued existence of the endangered desert pupfish.

BACKGROUND INFORMATION

Species Description

The desert pupfish was listed as an endangered species on March 31, 1986. Critical habitat for this species was designated at Quitobaquito Spring, Organ Pipe Cactus National Monument, Arizona and at three locations in Imperial County, California. The desert pupfish is a small fish historically common throughout much of the lower Gila River system, the lower Colorado River system, and the Rio Sonoyta system in Arizona, California, and Mexico (Minckley 1973). The desert pupfish is presently known to occur naturally in only three localities in California and Arizona and in the Rio Sonoyta, Laguna Salada, and lower Colorado River delta in Sonora and Baja California, Mexico (Black 1980, Miller and Fuiman 1987, Schoenherr 1988, Hendrickson and Varela 1989). Decline of the desert pupfish is due to human alterations of its habitat, such as water impoundment, water diversion, stream downcutting, backwater draining,

vegetation clearing, channelization, groundwater pumping, pesticides, and introduction of predatory and competitive nonnative fishes.

In December 1983, 200 desert pupfish were introduced into Mesquite Spring; 50 into the upper pond and 150 into the lower pond. In October 1984, a Bureau of Land Management (BLM) biologist reported that the pupfish had survived and reproduced in Mesquite Spring. No further monitoring occurred until 1989, when no pupfish were found. The present status of the desert pupfish at Mesquite Spring is unknown.

Project Description

Mesquite Spring is located northeast of the town of Florence in Pinal County, Arizona in T3S, R11E, SE1/4 SW1/4 of Sec. 21 at 2180 feet elevation (Maps 1 and 2). It is within the Phoenix District of the BLM. It lies in an intermittent drainage tributary to the Gila River. Mesquite Spring consists of two ponds, an upper and a lower (Figure 1). The upper pond has a surface area of approximately 300 square feet (15 X 20 feet) and varies seasonally from about 16 inches to 4 feet deep. The pond lies in a depression in the intermittent stream channel and it is unclear if it is natural or was excavated by humans. No berm or dam exists. The water source for the upper pond is either spring flow beneath the pond or intersection of the groundwater. At the time of the 1989 survey, the upper pond contained about 1 1/2 feet of loose organic ooze with a strong odor of decay. The lower pond, which is human excavated, has dried completely at least twice since the pupfish were stocked there in 1983, and is considered unsuitable for supporting fish.

Surrounding upland vegetation is typical of the paloverde-cacti series of the Arizona Upland subdivision of the Sonoran Desertscrub biome (Turner and Brown 1982). Riparian vegetation present includes seep willow (Baccharis salicifolia), mesquite (Prosopis juliflora), Bermuda grass (Cynodon dactylon), and tree tobacco (Nicotiana glauca). The upper pond is typically covered with duckweed (Lemna spp.), and receives a moderate amount of shading from surrounding vegetation.

The proposed action is to rehabilitate the aquatic habitat in the upper pond at Mesquite Spring and introduce an additional 200 desert pupfish. The habitat rehabilitation will retain the existing perimeter and depth of the pond. Using a backhoe, accumulated sediments will be dredged out and disposed of outside of the immediate area of the pond. A layer of sand and gravel approximately six inches deep will be placed into the bottom of the upper pond. A wire fence which currently runs through the upper pond will be removed and a four-strand barbed wire fence with a smooth bottom wire will be constructed around the upper pond, enclosing about 3,950 square feet. This fence will be used to exclude livestock grazing from the pond area. Cottonwood poles may be planted to provide additional shading of the upper pond.

When rehabilitation of the upper pond at Mesquite Spring is completed, it will be stocked with approximately 200 desert pupfish from Dexter National Fish Hatchery. The genetic origin of that stock is Santa Clara Slough, Sonora, Mexico. Actual stocking will be conducted by the Arizona Game and Fish Department (AGFD).

With the exclusion of livestock use at the pond, no foreseeable additional discretionary actions by BLM are expected at this site. It is not expected that additional cleaning out or maintenance of the pond will be necessary. Future mining in the vicinity of the site is possible but cannot be predicted with any certainty.

IMPACTS OF THE ACTION

The proposed rehabilitation of aquatic habitat at Mesquite Spring and supplemental stocking of desert pupfish is expected to result in an improvement in the status of this species. The present degraded state of the aquatic habitat is detrimental to the continued survival of the population.

Short-term adverse effects to the existing population are expected from the dredging and other activities within the pond. These include high turbidity, lowered productivity due to removal of the nutrient-rich bottom sediments, loss of cover due to removal of vegetation and debris, possible introduction of pollutants, and direct mortality of desert pupfish by crushing, removal in dredged material, and other factors. However, long-term effects of the habitat work are expected to be positive, primarily from better water quality due to removal of decaying bottom sediments and cattle excrement.

Excluding livestock from Mesquite Spring is expected to result in positive effects to the desert pupfish. Removal of livestock grazing will allow growth of a denser riparian shrub, tree, and herbaceous cover. Increased tree and shrub cover will moderate water temperatures, while increased herbaceous ground cover will reduce sediment input into the pond and stabilize the banks. Removal of livestock use on the pond will reduce the amount of organic matter, nutrients, and eroded soils which enter the pond, thus improving water quality and reducing sediment accumulation.

Supplemental stocking of desert pupfish into Mesquite Spring is expected to have a beneficial effect on the species as a whole. No adverse effects to the species are expected from the removal of the donor stock from Dexter National Fish Hatchery. The hatchery stock is of sufficient size to provide 200 pupfish without sustaining any direct or indirect effects. Supplemental stocking of Mesquite Spring will benefit the species by infusing additional genetic material into a severely depleted population, and it is hoped will bring this population back to a level where it will survive and increase in numbers.

INCIDENTAL TAKE

Section 9 of the Act prohibits any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. 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 taking provided that such taking is in compliance with this incidental take statement. The measures described below are nondiscretionary and must be undertaken by the agency or made a binding condition of any grant or permit issued to the applicant, as appropriate.

The Fish and Wildlife Service (FWS) anticipates that the proposed rehabilitation of habitat, exclosure fence construction, and supplemental stocking of desert pupfish at Mesquite Spring will result in incidental take of desert pupfish as follows:

1. Direct loss of individual fish during dredging of bottom sediments and placing of gravel.
2. Indirect loss of desert pupfish due to short-term habitat losses following habitat rehabilitation.

Direct losses of desert pupfish during capture, transport, holding, and stocking will not be incidental to this proposed action. Those losses will be covered as direct take under permits issued to Dexter National Fish Hatchery and AGFD for purposes of conservation of the desert pupfish. Reliable estimates of populations of desert pupfish are not obtainable due to sampling difficulties and to the rapid population changes inherent in short-lived species with high fecundity. Therefore, the incidental take anticipated as a result of the various aspects of this project cannot be quantified. Since the population presently existing in Mesquite Spring is thought to be very small, incidental take as a result of the proposed project is anticipated to be loss of up to all of the desert pupfish present in Mesquite Spring prior to supplemental stocking.

Reasonable and Prudent Measures

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

1. Conduct the proposed habitat rehabilitation work in a manner which will minimize direct mortalities of desert pupfish.
2. Conduct the proposed habitat rehabilitation work in a manner which will minimize take (loss) of desert pupfish habitat.

3. Maintain complete and accurate records of actions which may result in take of desert pupfish and their habitat.

Terms and Conditions for Implementation

In order to be exempt from the prohibitions of Section 9 of the Act, the following terms and conditions, which implement the reasonable and prudent measures described above, must be complied with.

1. Stocking of desert pupfish into Mesquite Spring shall be conducted during spring, summer, or early fall.
2. BLM shall notify FWS prior to stocking of desert pupfish.
3. BLM shall notify FWS in writing following stocking, of the date of stocking, number of live fish actually stocked, and any fish mortalities which occurred.
4. BLM (or an appropriate designee) shall regularly inspect and repair the exclosure fence.
5. BLM shall prepare a written report on the implementation of the aquatic habitat rehabilitation and the construction of the exclosure fence. The report shall include documentation of the actions taken, data on and sketches of any changes in aquatic habitat configuration (size, depth, shape, etc.), and before-and-after photographs of the area. A copy of this report shall be furnished, in writing, to the FWS within two months of completion of the action.
6. The desert pupfish at Mesquite Spring shall be monitored at least once in the first six months following stocking. Monitoring data shall be submitted in writing to the FWS and AGFD within one month following monitoring. Monitoring shall include gross abundance of desert pupfish, presence or absence of young pupfish, general distribution of desert pupfish throughout the pond, general habitat condition, water volume (fullness of pond), relative turbidity, changes in human uses of the area, and other pertinent data. This information may be collected by BLM under the direct authority of this biological opinion and with appropriate State permits, or may be arranged for with other agencies, organizations, or individuals which hold or obtain appropriate Federal and State permits.

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. The term

conservation recommendations has been defined as suggestions of the FWS regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The following constitute FWS conservation recommendations:

1. Do not permit diversion of springflow or ponded water at Mesquite Spring.
2. Take steps to ensure that no pollutants enter the water during action implementation.
3. Avoid any actions that would substantially increase the likelihood of introduction of nonnative fish or other nonnative aquatic life.

In order for the FWS to be kept informed of actions that either minimize or avoid adverse effects or benefit listed species or their habitats, the FWS is requesting notification of the implementation of any conservation recommendations.

CONCLUSION

This concludes formal consultation on this action. As required by 50 CFR 402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) 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; (3) the agency 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 (4) a new species is listed or critical habitat designated that may be affected by the action.

The FWS recognizes and appreciates the conservation work of the BLM for desert pupfish. If we can be of further assistance, please contact Sally Stefferud or Sam Spiller, Field Supervisor (Telephone: 602/379-4720 or FTS 261-4720).

Sue Rutman

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cc: Director, Arizona Game and Fish Department
 Regional Director, Fish and Wildlife Service, Albuquerque, NM (FWE/HC)
 Director, Fish and Wildlife Service, Washington, D.C. (HC)
 Hatchery Manager, Dexter National Fish Hatchery, Dexter, NM