UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
3616 W. Thomas, Suite 6
Phoenix, Arizona 85019

2-21-88-F-029

April 30, 1991

Charles M. Holt
Regulatory Branch
Los Angeles District
Corps of Engineers
P.O. Box 2711
Los Angeles, California 90053-2325

Dear Mr. Holt:

This responds to your request of March 4, 1991, for reinitiation of formal consultation with the Fish and Wildlife Service (FWS) pursuant to Section 7 of the Endangered Species Act (Act) of 1973, as amended, on the proposed realignment of U.S. Highway 180/Arizona 666 (U.S.180/AZ666) through the town of Nutrioso, including the construction of a new diversion dam on Nutrioso Creek, in Apache County, Arizona. The 90-day consultation period began on March 7, 1991, the date your request was received in our office.

The species of concern in this biological opinion is the threatened Little Colorado spinedace (Lepidomeda vittata). Critical habitat on Nutrioso Creek was designated for this species but is located below the proposed project area and no effects to critical habitat are anticipated.

The following biological opinion is based on information provided by the Corps of Engineers (Corps) and consultants to the project, information from the previous consultation on this project with the Federal Highway Administration (FHA), data in our files, and other sources of information.

BIOLOGICAL OPINION

It is my biological opinion that realignment of U.S.180/AZ666 through the town of Nutrioso, and construction of a new diversion dam on Nutrioso Creek is not likely to jeopardize the continued existence of the threatened Little Colorado spinedace (spinedace).

BACKGROUND INFORMATION

Consultation History

Formal consultation on this project was initiated by the FHA on April 18, 1989, with a non-adverse biological opinion issued by the FWS on May 22, 1989. The specific issue under consultation was the construction of a box

culvert in Nutrioso Creek for the new crossing required by the highway realignment. The removal of a non-functional diversion structure in Nutrioso Creek in the vicinity of the new crossing was also included in the project plans. This structure was believed to block the passage of fish species through the area. Subsequent to the issuance of the biological opinion, federal funding was withdrawn from the project and the local sponsor, Arizona Department of Transportation (ADOT), determined they would undertake the project with non-federal funding.

During the advanced engineering phase, it was determined by ADOT that the geologic conditions at the crossing site could not support a box culvert and a bridge would be necessary. In 1990, ADOT went to the Corps Regulatory Branch to secure a Nationwide Permit Number 26 under Section 404 of the Clean Water Act. Because of the presence of a listed threatened species in the project area, and changes to the project that had occurred since the biological opinion was issued in 1989, reinitiation of consultation was required prior to issuance of a Section 404 permit.

Species Description

The spinedace was listed as a threatened species with critical habitat on October 16, 1987. The critical habitat designation includes eighteen miles of East Clear Creek in Coconino County, eight miles of Chevelon Creek in Navajo County and five miles of Nutrioso Creek in Apache County. The critical habitat on Nutrioso Creek is located below Nelson Reservoir which is approximately six miles below the project area.

Historically, the spinedace occupied the Little Colorado River and its northward flowing tributaries off the Mogollon Rim. Few collections were made of the species prior to 1939, and extensive collections described in Miller (1963 in Minckley 1984) from the early 1960s' indicated the spinedace had been extirpated from much of this historic range. However, it was relocated in many areas later in the decade (Minckley and Carufel 1967) but again declined in the early 1970s' (Minckley 1973). Currently populations of the spinedace are found in several streams but may be subject to large fluctuations both in number and presence in those systems. Within the proposed project area, spinedace have been reported from both above and below the new crossing location (Marsh and Young 1988).

Spinedace are small (less than four inches) minnows with olivaceous, blue or lead grey dorsal surfaces and silvery sides. Habitat requirements are currently unclear, as the species has been reported from both clear and stagnant pools and flowing sections of streams over a variety of substrates (Miller 1963 in Minckley 1984, Minckley and Carufel 1967, Minckley 1984, Marsh and Young 1988). Spinedace are opportunistic feeders, utilizing both plant, aquatic and terrestrial invertebrates as available (Blinn and Runck 1990). Habitat destruction and competition and predation from introduced fish species are the primary causes for the decline of this fish.

Project Description

The realignment of U.S. 180/AZ 666 will require a new crossing location on Nutrioso Creek. A cast-in-place, eight span structure is proposed, having two abutments and seven sets of piers (three piers across in each set). The piers would be placed to not effect the existing low-flow channel of Nutrioso Creek. No drill rigs or other excavation equipment would operate below the ordinary high water line of Nutrioso Creek. Water for the construction activities will not be taken from Nutrioso Creek and no used construction water or other construction debris would be discharged into the creek.

Construction of the bridge will require removal of two existing diversion structures, one of which is non-functional and scheduled to be removed under the box culvert proposal in the previous consultation. That diversion structure will not be replaced. The functional diversion will be replaced as part of the project.

The new diversion structure will be within 75 feet upstream of the bridge and consist of two 42-inch ground level pipes for the normal flow of Nutrioso Creek, gates to close off those pipes when water is to be diverted, two diversion pipes, and a cattle ramp. The two 42-inch pipes would be 23 feet long due to channel grades and exit the diversion onto a short riprapped apron feeding back into the low flow channel. There will be no permanent pond upstream of the diversion and no lip or other barrier at the downstream end to prevent spinedace from entering the pipes. The diversion structure's pipes will be kept clear of debris during operations to allow for fish passage.

EFFECTS OF THE ACTION

Direct and Indirect Effects

Plans to construct the new bridge have incorporated elements to avoid construction related impacts to Nutrioso Creek and the resident spinedace. These elements are discussed in the project description section. The project plan also proposes to berm upslope of the new abutments to keep storm water flows from carrying sediments from the construction site into the creek. Properly implemented, these measures should reduce the potential for damage to habitat within the project area. Some increase in turbidity is anticipated; however, the level of that increase is not predicted as it will depend upon season of the year and other factors. The creek is already turbid in this area , possibly due to runoff from meadows (Marsh and Young 1988).

Removal of the two existing diversion structures will require activities within the low flow channel of the creek. The existing functional diversion would be replaced with another diversion approximately 60 feet upstream. The

relocation of the diversion would change the hydrologic regime of the portion of the creek between the old diversion and the new diversion from a perennial flow or ponded area to an area of intermittent flow, similar to that downstream of the existing diversion. This change would affect about 60 feet of stream channel.

Removal of the two existing diversions would require heavy equipment in the area of the low flow channel. All debris from the two structures would be removed from the creek channel. Some diversion of the water flowing down the creek will likely be necessary to construct the new diversion if construction takes place outside of the no or low-flow portion of the year. This could have an effect on the spinedace by drying up habitat, mortality of individuals from construction actions, and changes in stream flow. In addition, natural habitat would be modified by the new diversion. The existing substrate in this area is largely silt and clay with few areas of coarser sands or gravels (Marsh and Young 1988). The riprap used in the project would range in size from three to eighteen inches (.25 to 1.5 feet) and extend in a short apron downstream of the pipe outflows. In the project area, Marsh and Young (1988) found most spinedace in areas of slower water at pool mouths or riffle tails, on fine substrates, and often associated with undercut banks. Minckley and Carufel (1967) found them in deep pools and bends over both rocky and silty substrates. If the riprap areas can provide cover and velocities within the acceptable range of the species, they may provide suitable habitat, especially if food resources such as aquatic invertebrates are available in the riprap. The concrete and metal pipe diversion and cattle walkway will remove spinedace habitat over a 23 foot linear reach of Nutrioso Creek.

It is not known if the spinedace will traverse the 23-foot pipe to reach upstream habitats; however, the pipes have been designed to facilitate such movement. No barriers will be formed at either end and the pipes will be kept free of blocking debris. During very low flows, there may not be sufficient water flow through the two pipes to allow fish passage, but during higher flows the splitting of water volume may assist fish passage. Research is very limited on the effects of highway culverts on other than anadromous and nonanadromous salmonids. The entire diversion structure will be underwater in high flows and fish may be able to pass then as well. The existing functional and non-functional diversions in the project area limit the opportunity for spinedace to move upstream. Removal of the non-functional diversion and establishment of the new diversion, with its opportunities to allow for fish passage, is an improvement over the existing situation for fish movement in Nutrioso Creek.

There would be a conflict between construction time periods and the reproductive season of the spinedace. The breeding season extends from May to October (Minckley and Carufel 1967), thus there will likely be all life stages in the creek during the removal of the old diversions and construction

of the new diversion. Spawning in Nutrioso Creek in 1990 had largely ended by the end of May (Blinn and Runck 1990), as no females with mature eggs were found in June or July. Timing of construction in the low flow channel to later in the summer may reduce losses of eggs and larvae.

Cumulative Effects

The private landowner has a legal right to divert water from Nutrioso Creek and has maintained a diversion structure for that purpose. Currently, diversions from the existing structure dewater the creek below the diversion to a series of pools for approximately 450 feet, below which inflow from the adjoining irrigated meadows augments the flow and more continuous flow is restored (Marsh and Young 1988). With ADOT in charge of construction of the diversion and undergoing Section 7 consultation, the new diversion could incorporate features that offered the best opportunity to allow for free passage of spinedace in this reach of Nutrioso Creek.

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 and 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 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 such taking is in compliance with the incidental take statement contained in the biological opinion.

Due to activities to remove the existing diversions and construct the new diversion structure, the FWS estimates approximately 275 feet of spinedace habitat would be directly affected by construction activities. Effects would range from minor to complete changes in substrate and flow patterns. Indirect effects, such as sedimentation, would occur beyond the project area but the amount cannot be accurately estimated. Outside of the riprap apron and the diversion structure itself, habitat should return to normal after construction is completed.

In addition, the presence of spinedace in the construction zone virtually ensures that at least some individuals would be killed by construction. Since population levels for the spinedace can vary greatly from year to year, it is not possible to now estimate the number of adult fish that would be killed. The number of eggs and larvae that could be killed is also unknown and would, of course, vary with the timing of construction in the creek itself.

With the uncertainties described above in mind, the FWS sets an incidental take level of 8 percent of the local adult spinedace population in the year construction occurs.

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

1. Prior to the construction period, a fishery survey of the area will be accomplished to estimate local spinedace population levels.

2. Construction on the new diversion and removal activities at the two existing diversions that require work in the low flow channel should not take place before July 1 of the construction year to minimize loses of eggs and larvae. If work can be scheduled and accomplished during a dry period in the creek, this date does not apply.

3. If there is water in the low flow channel prior to or during construction work in the channel for the diversion structures, the top and bottom end of the project area in Nutrioso Creek should be blocked with nets and spinedace removed from the construction areas by trained fishery biologists and relocated immediately up or down stream in suitable habitat.

4. Construction areas will be monitored on a regular basis during the period of impacts to the creek for dead spinedace.

The following terms and conditions are necessary to implement the reasonable and prudent measures described above:

1. All spinedace activities should be accomplished by trained biologists having the necessary state and federal permits for such work.

2. Specimens of spinedace found dead will be kept and preserved to maintain a record of mortalities. Upon completion of the construction project, a report on the project, including information on documented mortalities, will be submitted to the FWS.

3. Specimens of spinedace found dead may be donated to scientific or educational institutions or disposed of under FWS authority.

If during the course of the action the amount or extent of the incidental take is exceeded, the federal agency must reinitiate formal consultation with the FWS and provide an explanation of the causes of the taking.

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 threatened and endangered species. The term "conservation recommendation" 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 FWS recommends the following:

1. During the period of construction, any pools in the construction area containing spinedace be monitored for water quality and presence of predatory fish species.

2. An agreement with the water user of the new diversion to provide proper maintenance of the structure to allow for passage of spinedace be developed.

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 affect 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, and/or if a new species or critical habitat designated that may be affected by the action.

If we can be of further assistance, please contact Ms. Lesley Fitzpatrick or me (Telephone: 602/379-4720; FTS 261-4720).

Sincerely,

Sam F. Spiller

Sam F. Spiller
Field Supervisor

cc: Director, Arizona Game and Fish Department, Phoenix, Arizona
Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico (FWE/HC)
Director, Fish and Wildlife Service, Washington,DC (HEC)
Fisheries Assistance, Fish and Wildlife Service, Pinetop, Arizona

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