



## United States Department of the Interior

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In reply refer to:

AESO/SE  
02EAAZ00-2012-F-0079

July 2, 2012

### Memorandum

**To:** Project Leader, Arizona Fish and Wildlife Conservation Office,  
Whiteriver, Arizona (Attn: Dominic Barrett)

**From:** Field Supervisor

**Subject:** Biological Opinion on the Partners for Fish and Wildlife Programs' Little  
Colorado River Bank Restoration Project

Thank you for your letter requesting Intra-Service formal consultation with our Arizona Ecological Services Office (AESO) pursuant to section 7 of the Endangered Species Act of 1973 (Act) (16 U.S.C. 1531-1544), as amended. Your request for formal consultation was dated January 6, 2012, and received by us the same day. The consultation addresses Partners for Fish and Wildlife Programs' (PFFW) proposed stream bank restoration project on the Little Colorado River (LCR), north (downstream) of Springerville, Apache County, Arizona and the threatened Little Colorado spinedace (*Lepidomeda vittata*; spinedace). You requested our concurrence with your "may affect, not likely to adversely affect" determination for the endangered southwestern willow flycatcher (*Empidonax traillii extimus*), and threatened Chiricahua leopard frog (*Lithobates chiricahuensis*). We concur with your determinations and provide the basis for our concurrence in Appendix A.

This biological opinion is based on information provided in your January 6, 2012, biological assessment, two field visits, and other sources of information. References cited in this biological opinion are not a complete bibliography of all references available on the species of concern, the proposed activities 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

January 6, 2012	PFFW program sent biological assessment to the Arizona Ecological Services Office (AESO);
March 5-6, 2012	AESO and the PFFW staff met at the project area for a site visit and to take stream channel measurements at the downstream reach;
April 10, 2012	AESO and the PFFW staff met at the project area for a site visit and to take stream channel measurements at the upstream reach;
June 21, 2012	AESO sent PFFW staff a draft biological opinion (BO);
June 25, 2012	PFFW responded to our draft BO.

## BIOLOGICAL OPINION

The proposed action is a cooperative project involving a private landowner, the Arizona Game and Fish Department's (AGFD) Landowner Relations Program, and the U.S. Fish and Wildlife Service's PFFW. Both the Landowner Relations Program and the PFFW are providing funds for this project. The PFFW funding provides the Federal nexus for section 7 consultation for a project on private land.

### Description of the Action Area

The action area is defined as those areas influenced by direct and indirect effects of the proposed action (USFWS 1998a). The action area for this project is privately-owned land along the LCR in the Richville Valley, approximately 10 miles north of Springerville, Apache County, Arizona and the adjacent downstream reaches where sedimentation from this project is likely to occur. The project site includes approximately 6,000 feet in two separate reaches of the LCR channel as well as downstream areas affected by any sediment generated by the project (Appendix B; Figures 1 and 2).

Activities will occur in two sections on private lands, on the upstream and downstream sites as described above. These two areas are separated by approximately 1,970 feet belonging to a different landowner who is not involved with this project. Watershed size, from the downstream end of lower reach is 440 mi<sup>2</sup>. The U.S. Geological Survey (USGS) stream gage (Little Colorado River above Lyman Lake near St Johns, Arizona; 09384000) is approximately three miles downstream from the project area. The USGS flood frequency analysis program PeakFQ determined that the 1.5 year return interval flood flow for this gage or estimated bankfull discharge is 456 cubic feet per second (cfs). LCR flood flows, even those that are relatively frequent (1.5 year = 456 cfs; 2 year = 693 cfs; 5 year = 1,657 cfs), are sufficient in magnitude to continue eroding stream banks at both reaches.

The upstream reach of the proposed project is fairly straight with a low sinuosity of 1.2 (stream length = 3,094 feet/valley length = 2,517 feet) (Appendix B, Figure 1). The primary emphasis for the PFFW Program project at the upstream reach is stabilization of highly eroding banks that threaten adjacent irrigated pastures. Three cross-sections were measured at the upper reach to

describe the highly eroded banks that have been identified for treatment in this project (Appendix B; Figure 1). Bank heights are high, with measurements from the bank toe to terrace top ranging from 11 to 17.5 feet.

The downstream reach has a higher sinuosity than the upstream reach. Its sinuosity is 1.75 (stream length = 2,920 feet/valley length = 1,490 feet) (Appendix B; Figure 2). Like the upstream reach, the primary emphasis at the downstream reach is stabilization of eroding banks that threaten adjacent irrigated pastures. Three cross-sections were measured at the upper reach to describe the highly eroded banks that have been identified for treatment in this project (Appendix B; Figure 2). Bank heights are lower than those in the upstream reach, but still threaten adjoining fields and structures. Bank heights measured from the bank toe to the terrace top range from 4 to 7.5 feet.

The woody riparian plant community is dominated by shrubby species such as coyote willow (*Salix exigua*), and Arizona rose (*Rosa woodsii*). Tree species such as narrowleaf cottonwood (*Populus angustifolia*) and Arizona walnut (*Juglans major*) are also found at the project sites. The wetland herbaceous community is comprised of numerous sedge (*Carex spp.*), rush (*Juncus spp.*), and grass species.

## **Proposed Action**

### **Objectives**

The project goal is to improve water quality by reducing the fine sediments from the eroding stream banks from entering the LCR. A U.S. Army Corps of Engineers (ACOE) 404 Permit is required for the implementation of this project. The PFFW program is coordinating with the ACOE in the permit process. We anticipate that all effects of the proposed action will be addressed in this BO. Specific project objectives are to:

- Reduce the fine sediment supplied by the eroding stream banks to benefit aquatic habitats and native fish, particularly the spinedace.
- Enhance the quality and quantity of native riparian vegetation along these reaches of the LCR;
- Increase stream stability while maintaining the natural stream processes; and
- Provide another positive example of riparian restoration and wildlife enhancement on private property within the LCR watershed.

In the approved Private Lands Agreement the Cooperator agreed to the following:

- Livestock access within project areas will be managed to ensure survival of planted materials, and allow vegetation establishment; and
- The site will be maintained to the maximum benefit of wildlife for the 10-year term of this agreement.

### **Restoration treatments**

Project objectives will be accomplished by stabilizing the eroding stream banks by:

- Re-sloping eight vertical stream banks to a 3:1 slope (for every one foot rise in elevation there will be three feet of horizontal distance) (Appendix C; Figure 1). Specific site designs will depend on bank heights at the particular sites. A total of approximately 380 feet of stream bank, at three locations, will be treated at the upstream reach and an additional approximately 650 feet, at five locations, will be treated at the downstream reach. A backhoe or excavator will be used to re-slope the vertical banks from above the river channel. A bulldozer may be used in the higher elevations away from the channel.
- Installing bio logs or Coir logs, and/or brush revetments (Appendix C. Figure 2) and native vegetation planting to protect and strengthen treated banks. Revetment involves laying live tree on their sides, tops pointed downstream, and anchored at the base of the treated banks. The trees will slow water velocities and allow sediment to be deposited on the banks and within the trees themselves. This provides a substrate for additional vegetation to establish and further stabilized the stream banks (ADEQ 2005). The disturbed areas will also be seeded with native grasses and forbs. Native willows will be planted on suitable banks. Mulch or erosion cloth will cover disturbed areas to reduce erosion and increase moisture retention for seedling and willow establishment.
- Installing rock structures and toe rock (Appendix C; Figure 3) on a maximum slope of 1.5:1 (for every one foot rise in elevation there will be 1.5 feet of horizontal distance). Toe rock is a rock layer, extending up to the bankfull elevation, placed at the base of an eroding stream bank. Its function is to reduce scouring and provide additional strength to the stream bank during high flow events (ADEQ 2005).

### **Conservation Measures**

- All heavy equipment will be cleaned prior to use. Equipment will be checked daily for oil leaks and removed from service if repairs are needed.
- Heavy equipment will not enter the river except at established hardened crossings.
- The river channel will not be moved from its current location.
- Excavated material will be deposited away from the river where it cannot fall back into the channel.
- Designated vehicle routes to carry materials, personnel, and equipment in the project area shall be limited to access areas located on the design drawings or determined in the field. Newly created routes will be raked and reseeded after construction is complete.
- Construction is planned during the low flow period in the early October 2012 to late March 2013. All activities will be completed outside of the spinedace spawning season, which begins in April and runs through October.

## STATUS OF LITTLE COLORADO SPINEDACE

The Little Colorado spinedace was listed as threatened with critical habitat on October 16, 1987 (USFWS 1987). Identified threats were habitat alteration and destruction, predation by and competition with non-native aquatic organisms, and recreational fishery management. Forty-four stream miles of critical habitat were designated as follows: 18 miles of East Clear Creek immediately upstream and 13 miles downstream from C.C. Cragin Reservoir (formerly called Blue Ridge Reservoir) in Coconino County; eight miles of Chevelon Creek in Navajo County; and five miles of Nutrioso Creek in Apache County. Primary biological factors of critical habitat consist of clean, permanent flowing water with pools and a fine gravel or silt-mud substrate.

The spinedace is a small (about four inch) minnow native to the LCR drainage. This fish occurs in disjunct populations throughout much of the LCR drainage in Apache, Coconino, and Navajo counties. Extensive collections summarized by Miller (1963) indicated that the spinedace had been extirpated from much of the historical range from 1939 to 1960. Although few collections were made of the species prior to 1939, the species is believed to have inhabited the northward flowing LCR tributaries of the Mogollon Rim, including the northern slopes of the White Mountains.

Food habits of spinedace include chironomid larvae, dipterians, filamentous green algae, and crustaceans (Runck and Blinn 1993, Blinn and Runck 1990). Spinedace are late-spring to early-summer spawners (Blinn 1993, Blinn and Runck 1990, Miller 1961, Minckley 1973, Minckley and Carufel 1967), although some females have been found to contain mature eggs as late as October (Minckley and Carufel 1967). A complete discussion of the taxonomic, distributional, and life history information is compiled in the Little Colorado Spinedace Recovery Plan (USFWS 1998b), and is included herein by reference.

Mitochondrial DNA work on the spinedace was initiated in the 1990s and indicated the existence of three sub-groups identifiable by geographic area (Tibbets et al. 1994): the East Clear Creek drainage; Chevelon Creek; and the upper Little Colorado River including Nutrioso and Rudd creeks. The study concluded that the genetic patterns seen were likely the result of populations isolated and differentiated by both natural and human-caused events. The East Clear Creek and Chevelon Creek sub-groups are more individually distinctive, likely the result of a higher degree of isolation, and possess unique haplotypes. Individuals from the upper Little Colorado sub-group are more similar to each other. Possibly, until recent time, there was one population with considerable gene flow until various dams and diversions increased local isolation. The cause and exact time of the isolation of the three sub-groups are not known, but Tibbets et al. (1994) recommend that all of these populations be maintained to conserve genetic variation in this species.

As would be expected for a species adapted to fluctuating physical conditions, the spinedace is found in a variety of habitats (Blinn and Runck 1990, Miller 1963, Nisselson and Blinn 1989). It is unclear whether occupancy of these habitats reflects the local preferences of the species or its ability to tolerate less-than-optimal conditions. Available information indicates that suitable habitat for the Little Colorado spinedace is characterized by clear, flowing pools with slow to moderate currents, moderate depths, and gravel substrates (Miller 1963, Minckley and Carufel 1967). Cover provided by undercut banks or large rocks is often a feature. Spinedace have also been found in pools and flowing water conditions over a variety of substrates, with or without aquatic vegetation, in turbid and clear water (Denova and Abarca 1992, Nisselson and Blinn

1991). Water temperatures in occupied habitats ranged from 58 to 78 degrees Fahrenheit (Miller 1963). Miller (1963) called the spinedace “trout like” in behavior and habitat requirements, and it is likely that prior to 1900 the spinedace used habitats now dominated by non-native salmonids.

As with most aquatic habitats in the southwest, the Little Colorado River basin contains a variety of aquatic habitat types and is prone to rather severe seasonal and yearly fluctuations in water quality and quantity. Both mountain streams and lower-gradient streams and rivers have provided habitat for the spinedace. Residual pools and spring areas are important refuges during periods of normal low water or drought. From these refuges, spinedace are able to recolonize other stream reaches during wetter periods. This ability to quickly colonize an area has been noted in the literature (Minckley and Carufel 1967) as well as in observations by others familiar with the species. Populations seem to appear and disappear over short time frames and this has made specific determinations on status and exact location of populations difficult. This tendency has been observed by both researchers and land managers (Miller 1963, Minckley 1973) and has led to concerns for the species’ survival.

Native fishes associated with spinedace include speckled dace (*Rhinichthys osculus*), bluehead sucker (*Pantosteus discobolus*), Little Colorado sucker (*Catostomus* sp.), roundtail chub (*Gila robusta*), and Apache trout (*Oncorhynchus gilae apache*) (USFWS 1998b). The list of non-native fishes is much larger and includes species with varying degrees of incompatibility with the spinedace’s long-term survival. The presence of non-natives was one of the primary reasons the species was listed, and may contribute to the disjunct distribution patterns observed and the spinedace’s retreat to what may be suboptimal habitats. Non-native fish may compete with, prey upon, harass, and alter habitat utilized by native fish. In the last 100 years, at least ten non-native fish species have been introduced or expanded into spinedace habitats. These include rainbow trout (*Oncorhynchus mykiss*), fathead minnow (*Pimephales promelas*), and golden shiner (*Notemigonus crysoleucus*). Surveys in East Clear Creek have documented the presence of these three non-native species and brown trout (*Salmo trutta*) in the watershed (Denova and Abarca 1992). Data from research experiments and field observations indicate that at least the rainbow trout is a predator and potential competitor with the spinedace (Blinn et al. 1993).

The spinedace is assumed to still occupy the streams it is known from historically (Chevelon, Silver, Nutrioso, East Clear Creek, and the LCR proper). Populations are generally small and the true population size for any occupied stream is unknown due to the yearly fluctuations and difficulty in locating fish. Spinedace have a tendency to disappear from sampling sites from one year to the next and may not be found for several years. This ephemeral nature makes management of the species difficult since responses of the population to changes within the watershed cannot be measured with certainty. However, all of the known populations have decreased since 1993 and drought conditions continue to put additional strain on all known populations.

The most recent survey and habitat data for each watershed are indicated below:

**Chevelon Creek Watershed:** Currently, the spinedace occupies a section of Chevelon Creek, several miles upstream of Chevelon Creek's confluence with the LCR on the privately owned Rock Art Ranch. Chevelon Creek through the Ranch supports robust populations of spinedace, where large schools of fish (40 to 50 individuals) can be seen swimming in pools downstream of The Steps, something not seen in any other currently occupied area (Lopez et al. 1998).

There are non-native species present throughout this reach, but green sunfish (*Lepomis cyanellus*) and crayfish, both predators of spinedace, were found to be uncommon in areas where spinedace numbers were highest (Lopez et al. 1998). However, AGFD has reported that largemouth bass (*Micropterus salmoides*) appear to be increasing in abundance above The Steps. At this time, the distribution and abundance of largemouth bass in this reach and how that may be impacting spinedace populations in the area is unknown. In addition, Willow Springs Lake, a reservoir located at the head of Chevelon Creek, contains a thriving population of smallmouth bass (*Micropterus dolomieu*). Though the smallmouth bass are currently located many miles upstream of known spinedace locations in Chevelon Creek, their occurrence and ability to move downstream may pose threat to spinedace and other native fish in the drainage.

On July 23, 2007, AGFD stocked 95 spinedace into five pools on West Chevelon Creek on the Apache-Sitgreaves National Forest. This tributary to middle Chevelon Creek contained only native fish at that time and is expected to provide spinedace habitat. In July 2008, surveys located spinedace within the perennial pools where they were originally stocked and downstream of the area in ephemeral reaches. It is unclear how many fish are still present or if they spawned in 2008. Further surveys and stockings of this area are needed to verify that spinedace persist in this Chevelon Creek tributary.

**East Clear Creek Watershed:** Spinedace currently occupy small, perennial pool habitats in West Leonard Canyon, Leonard Canyon (including Dines Tank), Bear Canyon, Dane Canyon, and Yeager Canyon. The populations and available habitat are all relatively small throughout the watershed, but West Leonard and Leonard Canyons continue to be the most dependable locations to find spinedace in the entire watershed. The Bear, Dane, and Yeager Canyon populations are sustained by moving spinedace from West Leonard Canyon and Dines Tank to these areas.

In October 2007, non-native green sunfish (multiple size classes), largemouth bass, and yellow bullhead (*Ameiurus natalis*) were detected near the boat ramp and in the Bear Canyon arm of the C.C. Cragin (Blue Ridge) Reservoir. These non-native species had not been documented here prior to 2007. If the non-native species were to access the above drainages, these predatory fishes could impair recovery efforts in the watershed. High-flow events during the winter of 2007 to 2008 could have allowed these fish to spread up and downstream of these locations. Surveys conducted 2010 did not document these non-native fishes upstream of the reservoir; however, AGFD found green sunfish below the dam. Currently Bear Canyon is the only occupied spinedace habitat located upstream of C.C. Cragin Reservoir. Efforts will be made to stock spinedace in Miller and Kehl Canyons, which are also located upstream of the reservoir.

**Little Colorado River (including Nutrioso Creek and Rudd Creek):** Spinedace are documented in several locations in the LCR from Springerville downstream to St. Johns, Arizona (Dorum and Young 1995). Spinedace occur on both the AGFD Wenima and Becker Wildlife Areas within this reach of the LCR in small to moderate numbers. Survey efforts in July 2009 found 238 spinedace at Wenima and 90 spinedace at Becker Wildlife Area. Surveys conducted in 2008 by the AGFD and Bureau of Land Management (BLM) located 39 spinedace above Lyman Lake in the LCR (M. Lopez. AGFD pers. comm. May 15, 2012). AGFD found spinedace approximately 1.5 miles downstream of the project site, Neilson Property, in June 2008.

Spinedace have been located in middle Nutrioso Creek from the Apache-Sitgreaves Forest boundary upstream to Nelson Reservoir and from Nelson Reservoir upstream to Nutrioso, Arizona (Lopez et al. 2001a). Spinedace were first located in Rudd Creek in 1994 (Lopez et al. 2001b).

In the spring 2005, AGFD personnel surveyed several 328-foot transects in Rudd and Nutrioso Creeks. In Rudd Creek, only a single spinedace and a few speckled dace were captured. A total of seven spinedace were captured upstream of Nelson Reservoir in Nutrioso Creek. No spinedace were found below the reservoir, but many fathead minnow and green sunfish were captured. April 2006 surveys were conducted in Nutrioso Creek and located 128 spinedace upstream of Nelson Reservoir. The largest concentration of spinedace was found on the EC Bar Ranch. No spinedace were located downstream of Nelson Reservoir (in Nutrioso Creek) or in Rudd Creek in the April surveys. However, in June 2006, AGFD located 415 spinedace in a drying pool in Nutrioso Creek that were moved into a more permanent pool on the EC Bar Ranch, and 74 spinedace in Rudd Creek. Surveys conducted in 2008 located spinedace above Nelson Reservoir, and above and below the gauging station on Nutrioso Creek. Spinedace were also located on lower Rudd Creek, below AGFD's Sipes White Mountain Wildlife Area property.

**Silver Creek:** As stated above, spinedace were thought to be extirpated from Silver Creek until a small number of fish were discovered in lower Silver Creek in July 1997 (Lopez et al. 1999). However, numerous surveys since then have failed to find spinedace, including an extensive survey in 2004 funded by a cooperative agreement with the BLM (McKell and Lopez 2005). It is believed that changes to the habitat since 1997 have likely increased habitat for non-native fishes. If spinedace are still present in Silver Creek, it may be that they exist at such low numbers that our current sampling techniques are insufficient to detect them in this altered habitat.

In 1997, the habitat in Silver Creek consisted primarily of shallow riffle/run habitat with occasional relatively small pools. Starting in 1999 and continuing to the present, the same areas now consist of almost exclusively deep, wide pool habitat due to extensive beaver dams. In addition, the extensive pool habitat, which extends for miles, has created prime habitat for non-native fish and crayfish. This change in habitat has made sampling the area extremely difficult. At this time, both the Fish and Wildlife Service and AGFD are hopeful that spinedace still exist in lower Silver Creek. However, the prognosis for spinedace recovery in Silver Creek is bleak at this time.

In addition to the above in-stream populations of spinedace, there are currently two refugial populations of spinedace. We have a refugial population of East Clear Creek spinedace located

at the Flagstaff Arboretum and a refugial population of Little Colorado River spinedace at AGFD's Grasslands Wildlife Management Area. We currently do not have a refugial population for the Chevelon Creek genetic sub-group, although we expect to have a captive population established at Winslow High School for the Chevelon Creek genetic sub-group in the future.

## **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.

### **Status of the Little Colorado Spinedace and its Critical Habitat in the Action Area**

AGFD surveyed the LCR in the Richville Valley in 1993 and 2009. Spinedace were not detected in either survey although suitable habitat occurs. AGFD found spinedace approximately 1.5 miles downstream of the project site, Neilson Property, in June 2008, which is within the proposed action area. Spinedace were also detected at sites approximately 3.6 miles and further upstream of the project site in July and August 2009 (M. Lopez AGFD pers. comm. May 15, 2012). Spinedace may move through the area. There is no Little Colorado spinedace critical habitat designated in the action area. Non-native aquatic species found in the action area included green sunfish and fathead minnow.

### **Factors Affecting Spinedace in the Action Area**

LCR flow and physical attributes have been affected by at least three upstream diversions, and past and present cattle grazing practices. Drought and increasing water demands have affected the species range wide including in the action area. The reduction of riparian vegetation, from livestock grazing or clearing, has resulted in deeply eroded stream banks that contribute large sediment loads. These stream banks are steep and high enough that large sediment masses likely collapse into the LCR regardless if a flood is occurring. Channel substrate embeddedness (excessive fines deposited within the interstitial spaces of larger gravels and cobbles,) was observed at numerous low gradient riffles during the two site visits. Spinedace are also vulnerable from predation and competition from the non-native aquatic species including crayfish, green sunfish, and fathead minnow found in this area (USFWS 1998b, USFWS 2008).

## **EFFECTS OF THE PROPOSED ACTION**

Effects of the proposed action refers 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, which 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.

AGFD surveys in 1993 and 2009 did not detect spinedace in the immediate vicinity of the proposed action; however the species may move throughout the area and does occur in the downstream reaches of the action area, and the proposed action may adversely affect spinedace due to heavy equipment disturbing LCR stream banks and causing sediment to travel downstream into occupied habitats. Conservation measures are in place to ensure that sedimentation caused by all construction activities will be limited to fine particles and gravels found in the treated stream bank sections. Sediments derived from bioengineering practices will be limited to soils displaced as the banks are re-sloped. Although spinedace can cope with some amount of sediment being carried in the water column, they prefer clear water which provides improved spawning sites. Sediment control measures are built into the project that will reduce or prevent fine sediment from entering the LCR, and it is anticipated that the project will have an overall benefit to the species.

Until the stabilization sites have recovered, bank erosion may result if large flood events occur immediately after construction and damage the new structures. We anticipate that the treated stream banks will be stabilized after construction is complete and planted vegetation has become established to a level it can protect the stream banks during flood flow events. Once the banks have stabilized, spinedace may be able to more readily use the project area due to improved water quality and habitat. We anticipate the proposed action will result in an overall improvement of habitat in this area by eliminating erosion, reducing sedimentation and turbidity, and increasing stream bank vegetation for cover and bank protection.

## **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 BO. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation following section 7 of the Act.

The LCR, in the action area, flows through multiple parcels of private property including the project area. There are numerous upstream diversions and irrigation outlets that reduce base flow in the LCR. A number of other activities including residential areas, grazing, and light recreation all occur in the action area. In 1999, the Upper Little Colorado River Watershed Partnership developed a comprehensive plan for the upper Little Colorado River watershed. This project accomplishes a part of their goal of riparian enhancement along a section of the LCR. The proposed action, in conjunction with past and future projects, will stabilize stream banks, enhance wildlife habitat, and maximize stream function of the LCR. Given the small size of the action area, no other actions are likely to occur in these reaches of the LCR.

## **CONCLUSION**

After reviewing the current spinedace status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the threatened Little Colorado spinedace. The Little Colorado spinedace is currently found in East Clear Creek and its tributaries (Coconino County); Chevelon Creek (Navajo County); and Nutrioso Creek, Rudd Creek, and the Little Colorado River (Apache County) in Arizona. The proposed action affects a small, but important portion of the species' range within the Little Colorado River drainage.

This project is consistent with the recovery objectives for the species and will result in an overall benefit to its conservation.

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 (50 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.

## **AMOUNT OR EXTENT OF TAKE**

Based upon the best available information concerning the spinedace and its habitat needs, and the project description, we do not believe that the short-term disturbance and increase in sediment into the LCR is reasonably certain to affect spinedace to the point where incidental take occurs. We anticipate adverse effects may result from the short-term pulse of sediment from this proposed project immediately following work in the channel.

## **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. After completion of the proposed action and rehabilitation of the stream banks, conduct periodic stream surveys to determine if habitat modifications have resulted in a change in the fish community within the two treatment sites.
2. Provide reports to our office documenting the project completion and success at meeting identified objectives.

In order for our office to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

### **Disposition of Dead or Injured Listed Animals**

Upon finding a dead or injured threatened or endangered animal, initial notification must be made within three days to the FWS Law Enforcement Office, located at 2450 West Broadway Road #113, Mesa, Arizona 85202 (480) 967-7900. Written notification must be made within five calendar days and include the date, time, and location of the animal, and any other pertinent information. 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 as soon as possible to this office or the nearest AGFD office, educational, or research institutions (e.g., University of Arizona in Tucson) holding appropriate State and Federal permits.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution before implementation of the action. A qualified biologist should transport injured animals to a qualified veterinarian. Should any treated listed animal survive, FWS should be contacted regarding the final disposition of the animal.

### **REINITIATION STATEMENT**

This concludes the Intra-Service formal consultation on the PFFW funding to support construction of riparian and stream habitat improvements on private land along the LCR. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: 1) new information reveals effects of the agency action that may adversely affect listed species in a manner or to an extent not considered in this opinion; 2) the proposed action is subsequently modified in a way that causes an effect to a listed species that was not considered in this opinion; 3) a new species is listed or critical habitat designated that may be affected by this action; or 4) incidental take is exceeded.

We appreciate your coordination with our office and your efforts to identify and mitigate effects to spinedace from this project. We also encourage you to continue to coordinate this project with the AGFD. For further information please contact Dave Smith (928) 556-2183 or Mary Richardson (602) 242-0210 (x242).

Please refer to consultation number 22410-2010-F-0584 in future correspondence concerning this project.

*Delmer T. Bill*  
AS Steven L. Spangle

cc (electronic copy):

Regional Supervisor, Arizona Game and Fish Department, Pinetop, AZ  
Assistant Field Supervisor, U.S. Fish and Wildlife Service, Flagstaff, AZ  
(Attn: Shaula Hedwall)  
Army Corps of Engineers, Phoenix, AZ  
Partners for Fish and Wildlife Service, Fish and Wildlife Service, Phoenix, AZ  
(Attn: Kris Randall)

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## **Appendix A: Concurrences**

### **Southwestern Willow Flycatcher**

We concur with the finding of “may affect, not likely to adversely affect” for the willow flycatcher from the proposed action for the following reasons:

- There is no suitable willow flycatcher breeding habitat in the action area.
- Recent surveys report the nearest known willow flycatcher occurrence is approximately 12 miles south of the project site and at a higher elevation.
- The construction will occur outside of the willow flycatcher August to September migration period.

### **Chiricahua Leopard Frog**

We concur with the finding of “may affect, not likely to adversely affect,” for the Chiricahua leopard frog from the proposed action for the following reasons:

- Chiricahua leopard frogs are considered to be extirpated from the LCR watersheds found in the action area (USFWS 2002).

## Appendix B. Maps of the Project Area

Figure 1. Aerial view of the proposed stream bank restoration locations on the upstream reach of the project area, Little Colorado River, Richville Valley, Arizona. The black lines are the cross-sections and the yellow lines overlay the steep eroded banks.



Figure 2. Aerial view of the proposed stream bank restoration locations on the downstream reach of project area, Little Colorado River, Richville Valley, Arizona. The white lines are the cross-sections; yellow lines overlay the steeply eroded banks; the red lines are the boundaries of this project site.



**Appendix C. Structural Feature Figures.**

Figure 1. Stream bank sloping diagram from project blueprints.

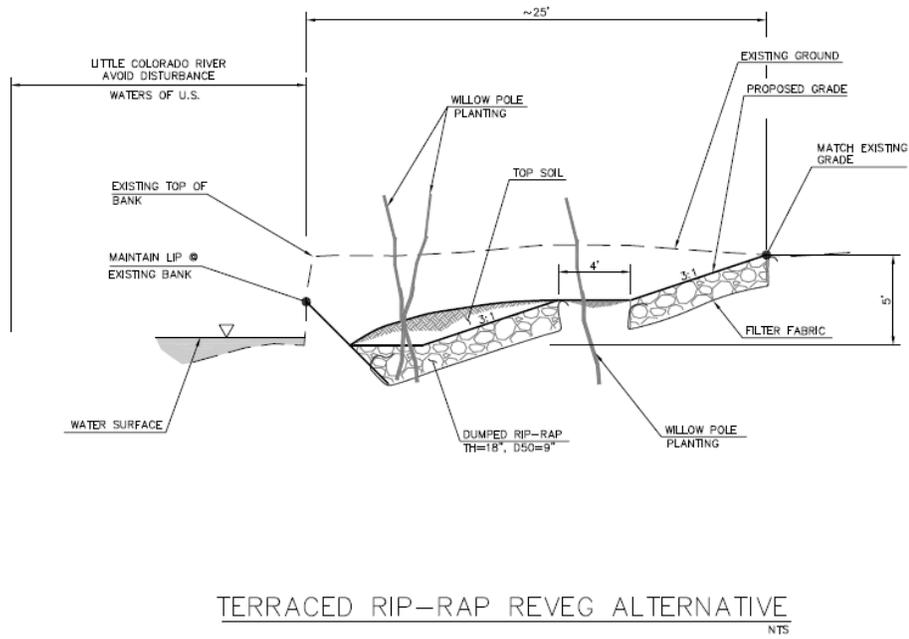


Figure 2. Brush revetment example.

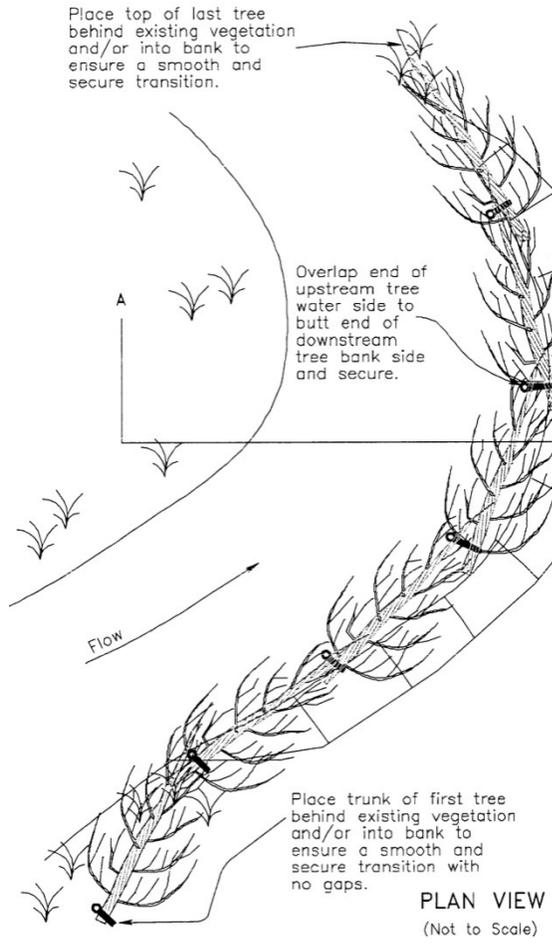


Figure 3. Toe rock diagram example

