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Fish and Wildlife Service

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November 20, 1997

John M. McGee  
Forest Supervisor, Coronado National Forest  
300 W. Congress  
Tucson, Arizona 85701

Dear Mr. McGee:

The U.S. Fish and Wildlife Service has reviewed the project plans for the proposed Sycamore Canyon Sonora Chub Project. Your October 1, 1997, request for formal consultation was received on October 6, 1997. This document represents the Service's biological opinion on the effects of this action on the Sonora chub (*Gila ditaenia*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531- 1544).

The Forest's request for initiation of consultation found that four of the proposed actions "may affect, but are not likely to adversely affect" the Sonora chub, and that one of the actions "may affect, likely to adversely affect" the Sonora chub. The findings of "may affect, not likely to adversely affect" are addressed under the section "CONCURRENCES."

This biological opinion is based on information provided in the October 1, 1997, project proposal, phone conversations with personnel from the Service and the Forest Service, data in our files or in the published or grey literature, and other sources of information. A complete administrative record of this consultation is on file in the Service's Arizona Ecological Services Field Office, Phoenix, AZ.

In this biological opinion the Service finds that the effects of the proposed Sycamore Canyon Sonora Chub Projects are not likely to jeopardize the continued existence of the Sonora chub. Three terms and conditions are described to reduce the possibility of take associated with one of the proposed actions which has the potential to adversely affect the chub. The Service also finds that the proposed actions are not likely to adversely modify critical habitat for the Sonora chub.

### Consultation History

During January, 1993 a large flood passed through Sycamore Creek in Santa Cruz County, Arizona, which significantly altered the creek structure. The flood eroded part of the terrace where Yanks Spring (=Hank and Yank Spring) is located. In early October, 1993, the U.S.

Forest Service (USFS) and the Service visited the site after being informed that a portion of the external pipe fitting on the tank at Yanks Spring was leaking and threatening to drain the tank. The USFS and Service staff evaluated the situation and determined that the tank would likely drain and the fish be lost if the tank was not protected from further loss of water. Pipe fittings were sufficiently tightened to stop the leak. However, the exposed pipes and eroded banks continued to make the situation unstable. A emergency consultation (2-21-94-F-183) and subsequent biological opinion was issued on that project.

On October 6, 1997, the Service received a copy of the Biological Assessment and Biological Effects from Coronado National Forest addressing a set of projects designed to reduce or eliminate threats to the Sonora chub, including modifications to stabilize Yanks Spring. The area of activity for the proposed actions was limited in scope to portions of the stream channel and floodplain along Sycamore Creek from the corrals downstream to the existing trailhead.

## BIOLOGICAL OPINION

### Description of the Proposed Action

The Nogales Ranger District, Coronado National Forest, requested formal consultation on a group of 5 activities, collectively known as the Sycamore Canyon Sonora Chub Project. These 5 activities were designed to enhance or maintain riparian habitat, including some designated Critical Habitat for the Sonora chub. The five projects are:

#### 1) Reinforcing Yanks Spring

Repairs to the concrete tank and bank armoring to prevent erosion will be undertaken to prevent loss of the fish deme found in the tank. Work will be done during low to no flow situations in Sycamore Creek to reduce the potential for increased siltation. The objective of channel stabilization along Yanks Spring is to maintain the spring and rock/mortar tank as a refugium for Sonora chub and native amphibians. The proposed work to protect the spring/tank includes backfilling and armoring about 200 feet of the bank adjacent to the spring, installing flow separation structures immediately upstream from the spring in the floodplain, and reestablishing floodplain banks upstream from the spring using rip-rap and vegetation from the existing floodplain. The bank reestablishment will include about 150 linear feet of work in the floodplain adjacent to the ordinary high water mark including the moving of some willow trees to the new bank. Work will be done from the stream side and no mechanized equipment will be permitted on the tank or spring. Buckets will be on hand during repair activity to salvage and move Sonora chub to Sycamore Creek if the tank at Yanks Spring goes dry while under repair. An attempt will be made to plug the outlet to the pipe from the inside of the tank, and the outlet pipe will be cut off to a length of less than 12 inches and welded or capped closed. If the tank goes dry it will be repaired, refilled, and Sonora chub from Sycamore Creek be placed into the tank. The materials needed for this portion of the project include 150 cubic yards of large rip-rap and 300 cubic yards of backfill material.

- 2) Relocating the Sycamore Canyon Trailhead north to a point immediately south of Ruby Road.
- 3) Obliterating the existing trailhead and approximately 1/4 mile of access road, and the portion of Forest Development Road (FDR) 4181 climbing out of the Sycamore Drainage. Closure of the existing stream crossing and obliteration of the existing trailhead cuts off the access to FR 4181 and consequently also FR 4180. A steep section of FR 4181 will have waterbars placed to close it and improve drainage, thus reducing sediment. Over time the road surface is expected to become vegetated once traffic and use is discontinued.
- 4) Relocating the fence south of Ruby Road to the north side of the road to prevent cattle from entering the riparian area. This entails installing two cattleguards, constructing one mile of new fence, and removing the cattleguard on Ruby Road adjacent to the Sycamore drainage.
- 5) Installing a waterline and drinker south of the corrals across FDR 682 to provide an alternate water source for cattle. The waterline and drinker will be located north (upstream) of Ruby Road. Water will be piped from an existing cattle tank located elsewhere and will not involve increased groundwater pumping.

The general location of these five projects are the Sycamore Canyon area near the Ruby Road crossing. Yanks Spring, the existing cattleguard, and the existing trailhead and access road are located south (downstream) of Ruby Road.

### **Description of the Project Area**

Sycamore Creek is a tributary of the Rio Altar approximately 15.5 miles west of Nogales in Santa Cruz County, Arizona. Sycamore Creek, one unnamed tributary, California Gulch, Atascosa Canyon, Penasco Canyon, and Yanks Spring are the only known locations of the Sonora chub in the United States. The entire area is managed by Coronado National Forest, Nogales Ranger District. Approximately half of the drainage is within the Pajarita Wilderness and Goodding Research Natural Area (Goodding 1961).

Yanks Spring is a perennial spring impounded by a concrete tank. The area near Yanks Spring receives regular visitor use. During low-flow years, Sycamore Creek is an interrupted stream consisting primarily of isolated pools (Service 1986, Carpenter and Maughan 1993). During heavy rainfall, Sycamore Creek reaches the international Border, approximately five miles downstream from Yanks Spring. Additional floods such as that which occurred in 1993 could cause the erosion and loss of the terrace where the tank is located and loss of the tank and its population of Sonora chub.

### **Status of the Species**

The Sonora chub was listed as threatened in 1986 (Service 1986), and is endemic to streams of the Rio de la Concepcion drainage of Sonora and Arizona (Service 1992, Minckley 1973).

Designated critical habitat includes Sycamore Creek (a tributary of the Rio Altar, west of Nogales, Santa Cruz County), extending downstream from and including Yanks Spring, to the international boundary with Mexico; the lower 2.0 kilometers of Penasco Creek; and the lower 0.4 kilometers of California Gulch, a stream entering Sycamore Creek from the west about 2.4 kilometers downstream from Yanks Spring. In addition to the aquatic environment, critical habitat includes a 12 meter riparian strip along each side of Sycamore and Penasco creeks.

Sonora chub is a desert adapted species, exploiting small marginal habitats and can survive severe environmental conditions. Adult Sonora chub are typically found in the deepest pools in Sycamore Creek. Other important habitat factors include substrate and floating cover. Habitats that supported Sonora chub throughout the summer were dominated by bedrock-sand substrates but lacked floating cover (Carpenter and Maughan 1993). Spawning of Sonora chub has been correlated with post-flooding periods at various times throughout the year (Carpenter and Maughan 1992). Information on food resources is limited, but likely includes aquatic and terrestrial insects, and algae (Minckley 1973), particularly Chironomids, Simuliids, and Ephemeroptera (Carpenter and Maughan 1992). For more detailed information on the biology of this species and additional scientific references, consult the Sonora chub Recovery Plan (Service 1992).

Since the Sonora chub was listed as threatened in 1986 (Service 1986), substantial improvement in the status of these species has not occurred. Threats to the species include habitat modification, predation or competition with non-native fishes, and indirect effects from grazing including erosion and siltation (Service 1986). Stresses to the habitat and individuals from cyclical wet and dry years may have an affect on the local populations. Populations of Sonora chub in Sonora, Mexico, are reported as "generally unmodified by human activities" (Service 1992). It is clear, however, that this species remains only in small, isolated populations all of which face continuing threats from human activities. Threats include watershed development, grazing and mining operations, and pollutants (Service 1992). Continued degradation of the habitat is not in the interest of the survival or recovery of these species.

### **Environmental Baseline**

The environmental baseline serves to define the current status of the listed species and its habitat to provide a platform to assess the effects of the action now under consultation. While it is clearly focused on the action area, it is important to include in this definition the status of the listed species throughout its range as well as in the action area. Any evaluation of the effects of the action must be made in the context of species status overall.

The environmental baseline is developed using past and present impacts of all Federal, State, or private actions and other human activities 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 or private actions which are concurrent with the consultation process. It also includes similar information from species habitats outside of the action area.

The present shallow, unvegetated, braided aspect of Sycamore Creek in this area has likely resulted from years of human uses of the watershed which have increased fine sediment loads, destabilized streambanks, removed riparian vegetation, and altered runoff patterns and volume.

### **Direct and Indirect Effects of the Action**

The proposed repairs of Yanks Spring are designed to maintain the tank and should have direct beneficial effects to Sonora chub. The exposed leaky pipes threaten the loss of the Sonora chub in the tank at Yanks Spring. The tank is artificial habitat and its long-term preservation unclear. As all work will be conducted outside of the tank, no equipment will be in the tank or the spring. Permanent loss of the tank would have to be carefully considered. Springs and associated spring boxes provide stable habitats that creeks may not.

Information about the condition of the tank or its supporting bank that may have occurred in the past year are not available. It is believed that the exposed pipes can be cut off to a length of less than 12 inches, capped or welded closed. The actual repair of the pipe should not impact the fish. The largest threat is that the tank may drain during the repair and the fish stranded in a concrete structure.

Project plans include removing the fish from the tank and placing them in Sycamore Creek if the tank starts to lose water. It is assumed that the water conditions are suitable for a smooth transfer and the fish will not require equalization to stream conditions. Transfer of all fish from the tank to Sycamore Creek is a management decision that may require further evaluation.

### **Cumulative effects**

Cumulative effects include the effects of future State, 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 ESA.

It is anticipated that ongoing actions such as continued grazing upstream from the action area (north of Ruby Road) may result in continuation of high sediment loads, thus preventing lower Sycamore Creek from attaining natural flow regimes.

### **Conclusion**

After reviewing the current status of the Sonora chub, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the Sycamore Canyon Sonora Chub Project (specifically the repairs and maintenance of Yanks Spring), as proposed, is not likely to jeopardize the continued existence of the Sonora chub, and is not likely to destroy or adversely modify designated critical habitat. The project should result in long-term stability of Yank Spring as a possible source population of Sonora chub should the populations in Sycamore Creek and its tributaries be lost due to catastrophe.

The other aspects of the project (discussed in CONCURRENCES, below) should improve critical habitat in Sycamore Creek.

### INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of ESA, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife 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. Harass is defined as 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 any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. 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 a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the agency so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The USFS has a continuing duty to regulate the activity covered by this incidental take statement. If the USFS (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

#### **Amount of Extent of Take**

The Service has determined that all of the fish in Yanks Spring may be displaced as a result of this proposed action. The incidental take is expected to be in the form of harm and harassment. Some fish may die if the tank fails, or from handling stress during transfer to either the holding tank or an alternative holding facility.

#### **Effect of the Take**

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

### **Reasonable and Prudent Measures**

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the Sonora chub:

1. Minimize loss of fish from Yanks Spring.
2. Make every effort to retain fish from Yanks Spring in situ.

### **Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the Act, the Forest Service must comply with the following terms and conditions in regards to the proposed action. These terms and conditions implement the reasonable and prudent measures described above. Terms and conditions are nondiscretionary.

The following terms and conditions implement the reasonable and prudent measures:

1. Establish a temporary holding tank on site for Sonora chub from the Yanks Springs tank before repair work begins. The holding tank should be of size sufficient to hold over 75 gallons of water, with minimum depth of 12 inches. Water temperature and quality in the holding tank should be similar to the water in the Yanks Spring tank. If the Yanks Spring tank begins to drain, fish should be gathered and placed in the holding tank. The holding tank should be secured against predators, and personnel should remain on site while chub are in the holding tank, in order to prevent vandalism.
2. If the water level in Yanks Spring tank falls below 40% of normal levels, fish should be placed in the holding tank. Subsequently, the pipes should be repaired, the Yanks Spring tank allowed to refill, and fish replaced from the holding tank back into Yanks Spring tank. Fish may be held for 48 hours or until 3 individuals have died, after which they will be transferred to an alternative holding site (described below). The Forest will contact the Service within 24 hours of placing fish in the holding tank.
3. An alternative holding site for Sonora chub should be ready to receive fish if the tank at Yanks Spring is destroyed and rendered unusable. Chub may be held at this alternative site until the appropriate parties determine the proper course of action. Potential facilities include Dexter National Fish Hatchery, Arizona Game and Fish Department, Arizona State University, University of Arizona, or the Arizona-Sonora Desert Museum. The Forest will submit a plan to the Service detailing the procedure for possible transfer of Sonora chub to the alternative holding site at least 14 days prior to modifications of Yanks Spring.

## CONCURRENCES

The Forest included 5 proposed actions in the Sycamore Canyon Sonora Chub Project. Four of these actions included findings of “may affect, not likely to adversely affect” the Sonora chub. These 4 activities include: (1) Relocation of the Sycamore Canyon Trailhead north to a point immediately south of Ruby Road; (2) Obliteration of the existing trailhead and access road, and the portion of FDR 4181 climbing out of the Sycamore Drainage; (3) Relocation of the fence south of Ruby road to the north side of the road to prevent cattle from entering the riparian area (entailing installation of 2 cattleguards on Ruby Road and the removal of 1 cattleguard on Ruby Road adjacent to Sycamore creek); and (4) Installation of a waterline and drinker south of the corrals across FDR 682 to provide a water source for cattle. The Service concurs that these 4 projects, as proposed, may affect, but are not likely to adversely affect, the Sonora chub. These projects should have a net beneficial effect on critical habitat for the Sonora chub, and the possibility of take occurring as a result of these activities is discountable.

## CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of ESA directs Federal agencies to utilize their authorities to further the purposes of ESA 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. The limited distribution of the Sonora chub makes its survival precarious. The USFS, in coordination with the Service and Arizona Game and Fish Department, should investigate the establishment of captive reserve populations of the Sonora chub.
2. Yanks Spring contains a healthy population of the Chiricahua leopard frog (*Rana chiricahuensis*). The Forest should make every effort to avoid unnecessary disturbance of these individuals during modifications to Yanks Spring, and should attempt to capture and hold individuals in temporary captivity if the Yanks Spring tank falls below 40% of normal capacity. This may require coordination with Arizona Game and Fish Department to obtain any necessary permits.
3. Two of the actions in the concurrence section are in support of cattle grazing. Because of the effects of cattle grazing on the watershed of Sycamore Creek, we recommend the Forest initiate formal consultation on this activity.
4. Two of the actions in the concurrence section are in support of recreational activities. The Forest should thus complete a watershed-level ecosystem plan for Sycamore Creek that focuses on recreation, livestock grazing, mining, and watershed improvement with special regard to the Sonora chub and Gentry indigo bush. Many requirements for a plan of this type were outlined in the Sonora Chub Recovery Plan (U.S. Fish and Wildlife 1992).

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

#### CONCLUSION

This concludes formal section 7 consultation on the Sycamore Canyon Sonora Chub Project. As required by 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 agency 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 a 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 agency action.

The Service applauds your leadership and initiative in resolving these issues. In future communication on this project, please refer to consultation number 2-21-98-F-0004. If we may be of further assistance, please contact Bob Reed or Angie Brooks.



for Sam F. Spiller  
Field Supervisor

cc: Regional Director, Fish and Wildlife, Albuquerque, NM (ES)  
Forest Supervisor, Coronado National Forest, Tucson, AZ (Attn: Mima Falk)  
Forest Supervisor, Tonto National Forest, Tucson, AZ (Attn: Jerry Stefferud)  
District Ranger, Nogales Ranger District, Coronado National Forest, Nogales, AZ  
(Attn: Tom Newman)

Director, Arizona Game and Fish Department, Phoenix, AZ

**REFERENCES CITED**

- Carpenter, J. and O.E. Maughan. 1992. Summer habitat use by Sonora Chub in Sycamore Creek, Santa Cruz County, Arizona. Final Report submitted to the Arizona Game and Fish Department.
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- Goodding, L.N. 1961. Why Sycamore Canyon in Santa Cruz County should be preserved as a nature sanctuary or natural area. *Journal of the Arizona Academy of Science* 1:113-115.
- Minckley, W.L. 1973. *Fishes of Arizona*. Arizona Game and Fish Department, Phoenix. 293 pages.
- U.S. Fish and Wildlife Service. 1986. Endangered and threatened wildlife and plants; final rule to determine the Sonora chub to be a threatened species and to determine its critical habitat. *Federal Register* 49:23402.
- U.S. Fish and Wildlife Service. 1992. *Sonora Chub Recovery Plan*. Phoenix, Arizona. 50 pages, plus attachments.