



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ARIZONA ECOLOGICAL SERVICES STATE OFFICE
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June 2, 1994

In Reply Refer To:
AESO/ES
2-21-94-F-183

Mr. Forrest Carpenter
Acting Regional Forester
U.S. Forest Service
517 Gold Avenue SW
Albuquerque, New Mexico 87102-0084

Dear Mr. Carpenter:

This biological opinion responds to your request of February 16, 1994, for formal section 7 consultation with the Fish and Wildlife Service (Service) pursuant to the Endangered Species Act (Act) of 1973, as amended, on the Emergency Repairs for the tank at Hank and Yank Spring on Sycamore Creek in Santa Cruz County, Arizona. The listed species potentially affected by this action is the threatened Sonora chub (*Gila ditaenia*). Critical habitat for the species consists of Sycamore Creek, starting from and including Yank's Spring downstream to the International Border with Mexico, plus the lower 1.25 miles of Penasco Creek, and the lower 0.25 miles of an unnamed stream that enters Sycamore Creek from the west. Critical habitat designation includes a 25 foot wide riparian area along each side of Sycamore and Penasco Creeks. The riparian zone around Yank's Spring, which is impounded by a concrete tank and is commonly known as "Hank and Yank Tank", is not included as critical habitat.

This biological opinion was prepared using information contained in the biological evaluation, other communication between the Forest Service (FS) and the Service, data in our files or in the published or grey literature, and other sources of information.

The 90-day consultation period began February 18, 1994, the date your request was received by the Arizona Ecological Service Office (AESO). Notice of that receipt was sent to you in a memorandum dated February 25, 1994.

BIOLOGICAL OPINION

It is the Service's biological opinion that the Emergency Repairs project for Hank and Yank Tank on Sycamore Creek is not likely to have jeopardized the continued existence of the threatened Sonora chub nor to have destroyed or adversely modified the species critical habitat.

BACKGROUND INFORMATION

Consultation History

During January 1993 a large flood passed through Sycamore Creek in Santa Cruz County, Arizona, which significantly altered the creek structure. In early October 1993, the U.S. Forest Service (USFS) and the Fish and Wildlife Service (Service) visited the site after being informed that a portion of the external pipe fitting on Hank and Yank Tank was leaking and threatening to drain the tank. The USFS and Service staff evaluated the situation and determined that if actions were not taken to prevent further loss of water the tank would likely drain and the fish would have been lost.

The Service recommended that the USFS, as the land managing agency should first make the decision to consult on the action because it would occur on lands under their responsibility. This was discussed at the Arizona Forest Supervisors meeting in Safford on November 20, 1993. Jim Abbott, Forest Supervisor, agreed that the situation should be resolved as soon as possible. As a result, both the USFS and Service agreed that emergency action was needed. It was agreed that the USFS would submit a biological evaluation to the Service after the repairs were complete.

Description of the Action

The purpose of this project was to stop the leak from the pipes on the tank. During early 1993, flooding drastically changed the channel of Sycamore Creek including the area around Hank and Yank Tank. A site visit by Service and USFS personnel to the site was made on October 5, 1994. The bank below the tank had been eroded leaving a seven-foot vertical wall up to the top of the tank. The area that is exposed runs parallel to the creek and the tank. A T-joint and a right angle joint leading back into the bank under the tank are exposed and are very rusty. A break in the pipe would likely drain the tank. Any additional erosion under or around the tank could result in additional bank destabilization. No estimates of Sonora chub numbers in the tank and spring area are available. A second site visit to the tank by Service employees on October 27, 1993, noted that the situation was identical to the October 5 finding.

Two attempts were made to stop the leak. The first attempt was on December 11, 1994, by Dr. Paul Marsh (Arizona State University). Dr. Marsh attempted to stop the leak by plugging it from inside the tank. SCUBA gear and diving techniques were required to explore the inside of the tank. There was a large amount of debris on the bottom of the tank (between 18 and 26 inches). Dr. Marsh remained in the tank for a minimum amount of the time (about five minutes) to avoid stirring up the debris in the bottom. This low level of disturbance in the tank should not have significantly harmed the fish and allowed the diver to see the area that needed to be plugged. Dr. Marsh was not able to detect the outlet to the pipe and, therefore, was unsuccessful at plugging the pipe.

The second attempt was made by Tom Newman (USFS, Nogales Ranger District) during the week of December 26, 1993. Mr. Newman visited the tank on two separate occasions. The first time he unsuccessfully tried to cap the pipe. The second time he was able to sufficiently tighten the fittings to stop the leak. Stopping the leak was the immediate problem that needed to be dealt with but the exposed pipes and eroded banks will continue to make the situation unstable.

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, two of its tributaries, and Yank's Spring are the only known location 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).

Hank and Yank Tank is a concrete tank which impounds Yank's Spring, a perennial spring. Yank's Spring is near a trailhead parking lot for visitors. The area 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 Yank's Spring.

Species Description

Sonora chub

The Sonora chub is endemic to streams of the Rio de la Concepcion drainage of Sonora and Arizona (Service 1992, Minckley 1973). In Arizona, the Sonora chub only occurs in Sycamore Creek (a tributary of the Rio Altar, west of Nogales, Santa Cruz County) and two of its tributaries (Service 1986). A small population of Sonora chub are also found in Hank and Yank Tank and at the spring source where it enters the tank. 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).

The Sonora chub was listed as threatened in 1986 (Service 1986). Since that time, substantial improvement in the status of these species has not occurred. Threats to the species include habitat modification, predation by or competition with non-native fishes, and indirect effect 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 these species remain only in small, isolated populations all of which face continuing threats from human activities. Some threats are 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.

EFFECTS OF THE ACTION

Environmental Baseline

The environmental baseline serves to define the current status of the listed species and its habitat and to provide a platform to assess the effects of the action now under consultation. While the baseline is clearly focused on the action area, it is important to include in its 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.

Direct and Indirect Effects

The proposed repairs of Hank and Yank Tank may have had direct beneficial effects of Sonora chub. No damage was done to the outside of the tank and the time inside the tank was kept to a minimum. Any increase in turbidity was not permanent, and probably insignificant. Direct injuries or crushing of individual Sonora chub were unlikely.

The most significant long-term effect to the Sonora chub is that the repairs directs actions towards preserving the tank, when that decision has not yet been made. The Hank and Yank Tank is artificial habitat and its long term preservation unclear. Permanent loss of the tank would have to be carefully considered. Springs, spring boxes, and stream headwaters may provide relatively stable habit conditions and act as refuges for ranid frogs during floods or drought. Possible leaching of heavy metals into streams as a result of acid precipitation has been implicated in the decline of the Tarahumara frog in Arizona and northern Sonora (Hale and Jarchow 1988). Leaching apparently results in low zinc:cadmium ratio causing toxic conditions for frogs. From 1980 to 1985 the only area where leopard frogs were abundant in Sycamore Canyon was at Hank and Yank Tank and the stream immediately below it. In this area zinc:cadmium ratios were 5 to 30 times that of downstream reaches (Hale and Jarchow 1988). The Category 1 Tarahumara frog (Rana tarahumarae), the Category 2 Chiricahua leopard frog (Rana chiracahuensis), and the Category 2 lowland leopard frog (Rana yavapaiensis) have historical records in Sycamore Canyon including Yank Tank.

Information about the condition of the tank or its supporting bank that may have occurred in the past year are not available. 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.

Cumulative Effects

Cumulative effects are those effects of future State, local, or private activities that have no Federal connection, that are reasonably certain to occur within the action area of the Federal action subject to consultation. Future Federal actions are subject to the consultation requirements established in section 7 and, therefore, are considered cumulative to the proposed action.

It is anticipated that the ongoing actions associated with maintenance of the tank will continue in the action area. Additional flood control or bank stabilization work is likely and may require a Clean Water Act, section 404 permit to proceed. No activity is authorized by a Nationwide Permit if that activity is likely to jeopardize the continued existence of a listed or proposed species, or destroy or adversely modify the critical habitat of such species. Additional State or private activities are not immediately foreseen for the action area.

INCIDENTAL TAKE

Section 9 of the Act, as amended, prohibits the taking (harass, harm, pursue, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species without a special exemption. Harm is defined as 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. 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 within the bounds of the Act, provided such taking is in compliance with the incidental take statement provided in the biological opinion. The measures described below are non-discretionary, and must be implemented by the agency or made a binding consideration of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply.

The Service has determined that no take of Sonora chub occurred. No damage was done to the outside of the tank and the diver's time inside the tank was kept to a minimum. Any increase in turbidity was not permanent, and probably insignificant. Direct injuries or crushing of individual Sonora chub were unlikely.

CONSERVATION RECOMMENDATION

Sections 2(c) and 7(a)(1) of the Act direct Federal agencies to use 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 Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for the species.

1. Evaluate the feasibility of maintaining the tank as a refugia for the Sonora chub, or as recovery habitat for the Chiricahua leopard frog and the Tarahumara frog.
2. Evaluate actions which will stabilize the tank until a decision about its long-term maintenance is developed. Conduct all proposed actions in a manner which will minimize the downstream transport of sediment during construction. No pollutants, e.g. machine oils, gas, and cement, should be discharged into the stream.

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3. Maintain a record of flood events which may impact the stability of the tank. To keep the Service informed of actions that either minimize or avoid adverse effects or that benefit 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 Emergency Repairs at Hank and Yank Tank as outlined in your February 16, 1994 request. 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 appreciates your leadership and initiative in resolving these issues. In future communications on this project, please refer to consultation number 2-21-94-F-183. If we may be of further assistance, please contact Debra Bills or Tom Gatz.


for Sam F. Spiller

cc: Regional Director, Fish and Wildlife, Albuquerque, NM (AES)
Director, Arizona Game and Fish Department, Phoenix, AZ
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Dr. Paul Marsh, Center for Environmental Studies, Arizona State University, Tempe,
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Dr. W.L. Minckley, Department of Zoology, Arizona State University, Tempe, AZ
Project Leader, National Biological Survey, University of Arizona, Tucson, AZ
(Attn: G. Maughan)

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