

2-21-95-F-303

SUMMARY
BIOLOGICAL OPINION
CROSS F ALLOTMENT GRAZING PERMIT ISSUANCE

Date of the opinion/report: September 12, 1995

Action agency: USDA Forest Service, Mesa Ranger District

Project: Biological Opinion on the proposed Cross F Allotment permit issuance

Listed species and critical habitats: Gila topminnow (*Poeciliopsis o. occidentalis*)

Biological opinion: Proposed action is not likely to jeopardize the continued existence of the Gila topminnow.

Incidental take statement:

Level of take anticipated: The Service anticipates incidental take of Gila topminnow will be difficult to detect for the following reasons: dead fish are difficult to find, cause of death may be difficult to determine, losses may be masked by seasonal fluctuations in numbers or other causes. However, take of the topminnow can be anticipated when livestock cause a reduction in water quality, which could cause fish mortality or moribundity and when livestock use the waters of Walnut Springs. Take of Gila topminnow can be anticipated when 50% of the aquatic macrophyte cover is lost to livestock activities. The change in macrophytes is measured by comparing the quantity of aquatic macrophytes in Walnut Springs pond the week before livestock are allowed in the corral to the whole time livestock are present.

Reasonable and prudent measures and terms and conditions: Reasonable and prudent measures: 1) Conduct all proposed actions in a manner which will minimize take of Gila topminnow; 2) Monitor the fish community and habitat to document levels of incidental take and to check for the release of exotic fish; 3) Maintain complete and accurate records of fish populations and habitat monitoring of both the riparian zone and uplands.

Conservation recommendations: 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.



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September 12, 1995

In Reply Refer To:
AESO/SE
2-21-95-F-303

Mr. Charles Bazan
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Dear Mr. Bazan:

The U.S. Fish and Wildlife Service has reviewed the biological assessment and evaluation (BA&E) for the proposed Cross F Allotment livestock grazing permit issuance on the Mesa Ranger District, Tonto National Forest. Your request for formal consultation was received on April 25, 1995. This document represents the Service's biological opinion on the effects of that action on the endangered Gila topminnow (*Poeciliopsis occidentalis occidentalis*) under section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 et seq.).

This biological opinion is based on information provided in your April 25, 1995, letter, BA&E, telephone conversations, field investigations, data in our files, and other sources of information. Your letter of July 3, 1995, notifying the Service of the change in the Highway 87 route, and the subsequent change in pasture boundaries was also used. A complete administrative record of this consultation is on file in this office.

Our records indicate there are no previous consultations on the Cross F Allotment. The topminnow reintroduction MOU between the Forest Service (FS), Arizona Game and Fish Department (AGFD), and the Service was consulted on and Walnut Springs was covered. The current Allotment Management Plan has not undergone section 7 consultation.

After reviewing the status of the Gila topminnow, the environmental baseline for the action area, the effects of the proposed permit issuance, and the cumulative effects, it is the Service's biological opinion that the interim grazing plan, as proposed, is not likely to jeopardize the continued existence of this species.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the issuance of the 10-year permit for livestock grazing on the Cross F Allotment. The allotment has been under management since 1981, when the first Allotment Management Plan (AMP) was approved. Under the first AMP, the allotment was managed under a one herd, three-pasture rest-rotation system. Each of the three pastures were grazed for six month periods, with a rest period of 12 months. The season of use alternates between summer (May-October) and winter (November-April).

In 1985, the AMP was revised. The allotment was split into five pastures under a rest-rotation system. The pastures are: Alder, Sheep Creek, Kitty Joe, Cottonwood, and Mazatzal. Alder Pasture (5,451 acres) includes Canyon and Alder Creeks. Sheep Creek Pasture includes Sheep Creek, and is about 5,386 acres in size. Kitty Joe Pasture (1,280 acres) and Cottonwood Pasture (2,390 acres) are located east of Highway 87, and are separated from the rest of the allotment by this highway. The Mazatzal Pasture (13,927 acres) is located on the north end of the allotment.

Approximately one-third of the allotment is located within the Mazatzal Wilderness. The permitted number of livestock is 345 cattle and 5 horses year-long. Until recently, 95 of the cattle were placed in a resource protection non-use agreement. Before AMP implementation, the permit allowed up to 400 cattle year-long and 139 yearlings from January 1 through May 31.

When livestock are being moved out of Alder Pasture, they are gathered into a holding pasture which surrounds Walnut Springs. They are only placed there for a short amount of time, while all the cattle in the pasture are gathered. The cattle are then moved to the next pasture. When the livestock were in this holding pasture, they had unrestricted access to Walnut Springs. The new permit will deny access to Walnut Springs when livestock are in the holding pasture. This will avoid the highest concentrations of livestock use in the Walnut Springs area.

STATUS OF THE SPECIES

The Gila topminnow was listed as endangered on March 11, 1967, without critical habitat. The Gila topminnow is a small, livebearing fish found in the Gila, Sonora, and de la Concepcion River basins in Arizona, New Mexico, and Sonora, Mexico (Minckley 1973, Vrijenhoek *et al.* 1985), but is listed only in the United States part of its range. It was once among the commonest fishes of the Gila River basin (Hubbs and Miller 1941). Destruction of its habitat through water diversion, stream downcutting, backwater draining, vegetation clearing, channelization, water impoundment, and other human uses of natural resources: plus competition with and predation by nonnative fish species, most notably mosquitofish (*Gambusia affinis*), have resulted in extirpation of the Gila topminnow through most of its range (USFWS 1984, Meffe *et al.* 1983).

Gila topminnow and many other poeciliids can tolerate a wide variety of physical and chemical conditions. They are good colonizers because of this tolerance and because a single gravid

female can start a population (Meffe and Snelson 1989). Minckley (1969, 1973) described their habitat as edges of shallow aquatic habitats, especially where abundant aquatic vegetation exists.

Gila topminnows are known to occur in streams fluctuating from 6 to 37°C, pH from 6.6 to 8.9, dissolved oxygen levels of 2.2 to 11 milligrams/liter, and can tolerate salinities approaching those of sea-water (Meffe *et al.* 1983). Topminnows can burrow under mud or aquatic vegetation when water levels decline (Deacon and Minckley 1974, Meffe *et al.* 1983). Sonoran topminnows regularly inhabit springheads with high loads of dissolved carbonates and low pH (Minckley *et al.* 1977, Meffe 1983, Meffe and Snelson 1989). This factor has helped protect small populations of topminnows from mosquitofish which are usually rare or absent under these conditions.

One of the main recovery actions for topminnow has been to reintroduce fish into suitable habitat within historic range (USFWS 1984). Probably no endangered native fish has undergone as many stockings as has the Gila topminnow (Minckley and Brooks 1985, Brown and Abarca 1992).

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 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.

The Cross F Allotment, on the northern end of the Mesa Ranger District, encloses about 29,000 acres. The allotment varies in elevation from 2,500 feet in Lower Canyon Creek to 7,022 feet on top of Mt. Peeley. The topography is variable with flat basalt mesas and rolling ridges on the south and east portions of the allotment, and steep canyons and high steep-sided mountains on the west and north portions of the allotment.

The allotment is dominated by semi-desert grassland and chaparral, but also includes desert scrub, pinyon-juniper (*Juniperus* spp.-*Pinus* spp.), riparian, and conifer vegetation types. The desert scrub type covers a small portion of the allotment and occurs in lower Canyon and Alder Creeks at the lowest elevations. Pinyon-juniper is limited to small areas along the eastern side of the allotment. Coniferous vegetation, including Arizona cypress (*Cupressus arizonica*), Douglas fir (*Pseudotsuga menziesii*), and ponderosa pine (*P. ponderosa*), are limited to the north end of the allotment and to drainage bottoms and northern aspects. Riparian areas are present in the east and west forks of Sycamore Creek, main Sycamore Creek, Kitty Joe, Alder, and Sheep Creeks, and a small, unnamed drainage that enters Sycamore Creek in the south half of section 36, T7N, R8E. These areas support a variety of plants including Arizona sycamore (*Platanus wrightii*), Arizona cypress, Arizona walnut (*Juglans major*), paloblanco (*Celtis reticulata*), mesquite (*Prosopis juliflora*), catclaw (*Acacia greggii*), willow (*Salix* spp.), Fremont cottonwood (*Populus fremontii*), Emory oak (*Quercus emoryi*), and a large variety of herbaceous plants.

Riparian vegetation present at Walnut Spring includes Arizona walnut, grape (*Vitis arizonica*), mesquite, hackberry, and ash (*Fraxinus velutina*). Leopard frogs (*Rana* sp.) and mud turtles (*Kinosternon* sp.) are also present. Vegetation downstream of the spring is extremely thick.

Walnut Springs was, at one time, a spring originating from the side of a steep hill. Apparently to increase accessibility, a pond was excavated out of the hillside (Appendix A). The drainage area of this pond is extremely small, consisting only of a small hill and the immediate area surrounding the pond. The pond, once used to trap cattle, is surrounded by a fence. When in the Alder Pasture, livestock are allowed to move in and out of the Walnut Spring area at will. The Alder Pasture is grazed for 6 months, then rested for 12 months. Season of use alternates between summer (May-October) and winter (November-April).

Livestock use near the spring is indicated by sparse herbaceous plant material and reduced regeneration of woody riparian vegetation within the fenced area. The shore of the pond is highly compacted, with old cattle fecal material present. These impacts affect the topminnow habitat by contributing to the eventual silting in of the pond, and by continually adding fecal material to this small spring.

During the summer months, the livestock have been known to feed on the aquatic macrophytes, clipping them back from the edges of the pond. They have not been known to clip them back beyond a few feet from the pond's edge. Gila topminnow are known to prefer areas with aquatic vegetation. Therefore, grazing pressure on the macrophytes would result in a temporary reduction of topminnow preferred habitat.

Arizona has been influenced by Europeans and their descendants for centuries and by Native Americans for longer (Bahre 1991). The effects of this use, though not always obvious, has been pervasive and widespread. These changes can be seen on the Tonto National Forest. Cattle grazing has occurred in this part of Arizona since the last half of the 19th century (Croxen 1926).

These regional vegetation changes can be seen on the Tonto National Forest. Trees and small shrubs and cactus such as mesquite, snakeweed (*Gutierrezia sarothrae*), and prickly pear (*Opuntia* spp.) have probably increased at the expense of desert grassland. The riparian and wetland areas of the Forest have probably declined from what they were (Croxen 1926, Davis 1982) and are part of a region-wide decline (Lowe 1964, Carothers *et al.* 1974).

Status of the Species in the Action Area

Gila topminnow occur in Walnut Springs, in the Alder Pasture. Reintroduced to the site on June 4, 1982, this population is thriving. About 1,000 fish were introduced from stock taken from the Boyce-Thompson Arboretum. Topminnow from the Arboretum are of potentially mixed stocks. This site has one of the largest and longest surviving populations of reintroduced topminnows.

The site was visited by the Forest Fisheries Biologist and the District Range Staff on April 4, 1995. Reproduction had already begun, with an estimated number of at least 1,000 topminnow

present. Dark colored males were observed flanking the lighter-colored females. Macrophytes were covering about 1/4 of the pond surface. The pond is between 30-40 feet in diameter, with an estimated maximum depth of about one foot. Average depth was about 10 inches. A layer of decaying plant material and silt has settled to the bottom of the pond, which has not been dredged for a minimum of 16 years (the time the Range Staff has been present on the district). The topminnow population has been monitored periodically since the 1982 introduction.

Effects of the Action

The main impacts from cattle are the grazing of plants and trampling of vegetation and soil (Marlow and Pogacnik 1985). These impacts can affect both riparian zones and uplands. In addition, cattle can affect water quality (Armour *et al.* 1991).

Recent Production/Utilization (P/U) surveys have shown a dramatic decrease in utilization levels on this allotment. This is due to improved management under a rest-rotation schedule which has produced more even utilization and more forage production. Reduced livestock numbers are also a factor. In the early 1970s and again in the early 1980s, P/U studies indicated overall high utilization levels over much of the allotment, particularly near permanent waters. Since the implementation of the AMP, however, utilization levels have been dropping; Recent P/U studies indicate that overall, the allotment utilization is within acceptable levels. One exception to this is just above the Cross F private land, along the forks of Sycamore Creek. This problem area has been identified by the District Range Staff, who is working with the permittee to resolve the over-utilization. The District Range Staff feels that the over-utilization can be avoided in the future now that the problem has been identified and shown to the permittee.

Due to the small drainage area above Walnut Springs pond, grazing outside the spring fence will have little impact on the pond. In addition, because the cattle will be present for a relatively short duration, the potentially detrimental (Cross 1971, Taylor *et al.* 1991) effect of livestock waste on fish is not expected to present a serious threat. In addition, wetlands are noted for their ability to remove pollutants (Johnston *et al.* 1990).

While it is probable there will be effects on individuals, it is doubtful that the livestock grazing is affecting viability of the population. This population has existed and thrived in the presence of livestock for 13 years. It is doubtful that livestock grazing under the proposed management strategy would result in the loss of this population of Gila topminnow.

The amount of open water may decrease with the reduction of livestock grazing of vegetation. The effect of reducing livestock access to riparian and aquatic habitat is likely to be positive to Gila topminnow by improving habitat stability. There is potential for long term negative impacts associated with ecological succession.

Cumulative Effects of the Proposed Action

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to

occur during the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in section 7 and, therefore, are not considered cumulative in the proposed action.

Highway 87 and livestock grazing are the major sources of human-related impacts to the Cross F area. Continual impacts from the section of the highway within the Sycamore Creek riparian corridor will soon be addressed by the realignment of the highway and may be consulted on. Much of the allotment is within the Mazatzal Wilderness or is inaccessible to recreationists; therefore, recreation pressure is low.

CONCLUSION

After reviewing the status of the Gila topminnow, the environmental baseline for the action area, the effects of the proposed permit issuance, and the cumulative effects, it is the Service's biological opinion that the interim grazing plan, as proposed, is not likely to jeopardize the continued existence of this species.

INCIDENTAL TAKE

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 if 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 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 Forest Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest Service (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit and (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

The Service expects that the proposed permit issuance and associated actions may result in incidental take of Gila topminnow. Incidental take of topminnow will be difficult to detect for these reasons: dead fish are difficult to find, cause of death may be difficult to determine, losses may be masked by seasonal fluctuations in numbers or other causes. However, incidental take

of Gila topminnow is likely due to livestock use of water by trampling of topminnow, changing habitat through vegetation use, or changes in water quality. However, take of this species can be anticipated when 50% of the aquatic macrophyte cover is lost to livestock activities. The change in macrophytes is measured by comparing the quantity of aquatic macrophytes in Walnut Springs pond the week before livestock are allowed in the corral to the whole time livestock are present. In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species. No take of any other species is anticipated.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the take of the above species.

1. Conduct all proposed actions in a manner which will minimize take of Gila topminnow.
2. Monitor the fish community and habitat to document levels of incidental take and to check for the release of exotic fish at Walnut Springs.
3. Maintain complete and accurate records of fish populations and riparian and aquatic habitat monitoring at Walnut Springs.

Terms and Conditions for Implementation

To be exempt from the prohibitions of Section 9 of the Act, the FS Mesa Ranger District is responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following terms and conditions implement reasonable and prudent measure 1.
 - 1.1. Issue the permit consistent with the objectives of the AMP.
 - 1.2. The timing, use, yearlong rest, and grazing deferment of the Alder Creek pasture will be as described.
 - 1.3. Livestock numbers on the allotment shall not exceed 350.
 - 1.4. The water at Walnut Spring and pond will be available to livestock only when they are scheduled to graze Alder Creek pasture. Walnut Spring may not be used as a trap when gathering the Alder Creek pasture.
 - 1.5. The fence surrounding Walnut Spring and pond shall be inspected and maintained before any livestock gathers occur in Alder Creek pasture.

2. The following terms and conditions implement reasonable and prudent measure 2.
 - 2.1. The FS shall work with AGFD and the Service to insure that fish population monitoring occurs at least once every two years.
 - 2.2. Using FS standardized procedures, and as a measure of topminnow habitat, the FS will monitor riparian condition at the spring, pond, and stream at least once every two years.
 - 2.3. The FS shall measure the amount of aquatic macrophytes in the Walnut Springs Pond the week before livestock are allowed access to the pond. The FS will periodically monitor the amount of aquatic macrophytes that are present during the period that livestock have access to the pond, to discern if this measure of take has been met.
3. The following terms and conditions implement reasonable and prudent measure 3.
 - 3.1. Maintain complete and accurate records of fish populations and habitat monitoring of Walnut Spring, pond, and stream.
 - 3.2. Copies of the records required in 3.1 above shall be provided annually to the Service on September 1.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. With implementation of these measures the Service believes that no more than 50% of the aquatic macrophyte cover in Walnut Spring pond is lost to livestock activities. If, during the action, this level of incidental take is exceeded, such incidental take represents new information requiring review of the reasonable and prudent measures provided. The Forest Service must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Endangered Species Act (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. It is recommended that the FS should identify sites on the Tonto National Forest that are suitable for Gila topminnow. Additional populations would help meet recovery objectives. This effort would be in consultation and coordination with the Service, AGFD, and the Desert Fishes Recovery Team.

2. We recommend that the FS should consult on the complete Allotment Management Plan when it is revised.

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.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the actions outlined in the April 25, 1995, request for formal consultation on the proposed Cross F Allotment permit issuance. As provided in 50 CFR §402.16, reinitiation 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) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is later modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate the Forest's concern for the conservation of the Gila topminnow. If we can be of further assistance, please contact Doug Duncan or Ted Cordery.

Sincerely,



Sam F. Spiller
State Supervisor

cc: Director, Fish and Wildlife Service, Washington, D.C. (DES) [cc:Mail R9FWE_DES]
Regional Director, Fish and Wildlife Service, Albuquerque, NM (AES)
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District Ranger, Mesa Ranger District, Mesa, AZ

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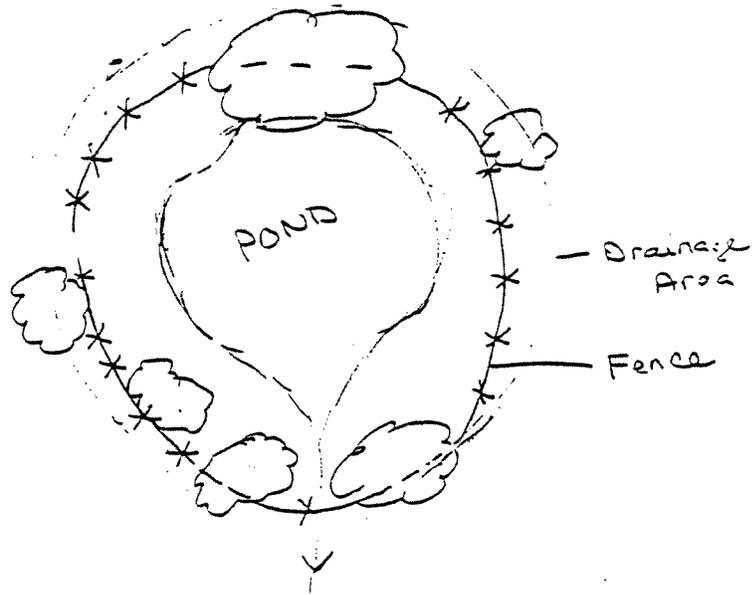
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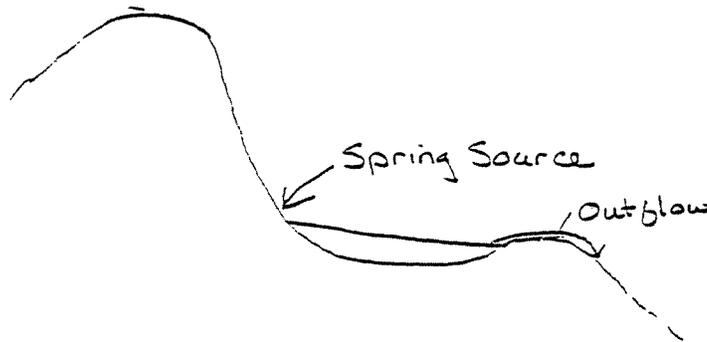
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WALNUT SPRINGS

Top View



Side View*



* Did not include fence or trees.

Appendix A. Walnut Spring site schematic.