

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION
_CONSULTATION/CONFERENCE/CONCURRENCE

Originating Person: Marie Sullivan
Date: March 26, 1993

- I. Region: 2
- II. Service Activity (Program):
Arizona Ecological Services Office (AZES), Phoenix, Arizona
Partners for Wildlife
Cottonwood Springs Cooperative Agreement
- III. A. Listed species **and/or their critical habitat within the action area:**
Gila topminnow (Poecilopsis o. occidentalis) Endangered
- B. Proposed species and/or proposed critical **habitat** within **the action area:**¹
None
- C. **Category 1 and 2 candidate species within the action area:**
- | | |
|--|-------------------|
| Huachuca water umbel (<u>Lilaeopsis schaffneriana recurva</u>) | C1 |
| Southwestern willow flycatcher (<u>Empidonax traillii extimus</u>) | C1 |
| Northern gray hawk (<u>Buteo nitidus maximus</u>) | C2 |
| Northern Mexican garter snake (<u>Thamnophis eques megalops</u>) | C2 |
| Huachuca springsnail (<u>Pyrquulopsis thompsoni</u>) | C1 |
| Golden aster (<u>Heterotheca rutteri</u>) | C2 |
| Bartram stonecrop (<u>Graptopetalum bartramii</u>) | C2 |
| Lowland leopard frog (Rana <u>yavapaiensis</u>) | C2 |
| Canyon (giant) spotted whiptail (<u>Cnemidophorus burti</u>) | C2 ³ |
| Yellow-billed cuckoo (<u>Coccyzus americanus</u>) | C3 ^{2,4} |
| Buff-breasted flycatcher (<u>Epidonax fulvifrons</u>) | ⁵ |

Data Source:

Unless indicated, Candidate species are recorded in the Heritage Database Management System available at Arizona Game and Fish Department's (AGFD) Phoenix Office.

Observations made by the Nature Conservancy (TNC) staff at Cottonwood Springs. Nesting willow flycatchers would be **E.t. extimus**. TNC staff have observed willow flycatcher at Cottonwood Spring but have not confirmed any nesting individuals, therefore, a positive identification for E.t. extimus has **not** been confirmed.

³ Fish and Wildlife Service (Service), Arizona Ecological Services Office and DOI CFR Part 17.

⁴ Recent published information may result in a new petition to list.

⁵ The Service was petitioned in 1992 to list this species. It is currently not a Federal candidate.

IV. Geographic area or station name and action:
Cottonwood Spring, Sonoita Creek, Santa Cruz County, Arizona

V. Location (map attached)

A. County and State:
Santa Cruz County, Arizona

B. Section, township, and range:
Secs. 33 and 34, T.20S., R.16E.; Sonoita Creek USGS 7.5' quadrangle

C. Distance (miles) and direction to nearest town:
Cottonwood Spring is located three miles southwest of Sonoita and eight miles north of Patagonia off **of** State Highway 82.

VI. Proposed Action

Cottonwood Spring is a 20-acre parcel owned by Davis Merwin, a private landowner, along Sonoita Creek, Santa Cruz County, Arizona. On July 1, 1992, Davis Merwin and (TNC) entered into a Partners for Wildlife Cooperative Agreement (Agreement) with the Service to protect and restore cottonwood/willow and cienega wetland habitat to protect species of Federal concern such as the endangered Gila topminnow, Huachuca water umbel (candidate, category 1), Huachuca watersnail (candidate, category 1), and neotropical migratory birds and their habitat. The terms of this Agreement are for 20 years (see Attachment).

The cienega along Sonoita Creek is to be protected from livestock grazing by constructing a fence to exclude cattle from this sensitive habitat and the adjacent mesquite bosque and by providing two livestock drinkers in the upland area (Figure 2). Some of the existing fenceline will also be repaired. Additional facilities to be installed include a water filter in Cottonwood Spring, solar powered water pump, solar cells, and two pipelines feeding the drinkers. The solar pump and cells will be placed on the slope above the spring.

Any fence installation or repair of existing fencing will follow the (AGFD) specifications for wildlife fences (i.e. the top and bottom wire will be barbless). The existing fenceline which crosses the cienega will be removed (Figure 2). Additional fencing will be installed up the hill to the south drinker to prevent cattle access to the slopes immediately above the cienega. This will help reduce the potential for increased turbidity in Sonoita Creek from grazing activities.

The galvanized steel pipeline extending to the north drinker will be buried within the cienega to reduce potential breakage from flooding or debris. This 1.25 inch diameter pipeline will be buried at a minimum of 12 inches below the surface. This is equal to twice the maximum depth of the deepest portion of the low flow channel through the cienega. The pipeline will be placed upstream of where the spring drains into Sonoita Creek in an area that is seasonally wet. The pipeline trench will be made using a hand-held trencher and disturbance to the cienega will be kept to a minimum. Trench width is anticipated to be approximately four to six inches. Construction of the trench will occur in the late spring after winter runoff has occurred but before summer monsoons. Material which is removed during trenching will be stockpiled on the outer edge of the cienega away from the low flow channel. The trench will be backfilled with topsoil and resodded with sod removed when the trench is dug.

The average rate of flow from Cottonwood Spring is 75 gallons per minute (gpm). The pump and drinker system will be designed to allow a maximum

of 6 gpm flow to be diverted out of the spring. Flow will **only** be diverted for six weeks during the fall for the north drinker and between November and April for the south drinker (Figure 2). The drinkers will be equipped with float valves so only enough water required to fill the drinkers will be diverted. The float valves will be covered to prevent breakage by cattle. The pump system will be designed so that when the drinkers are full, water in the pipeline will flow back into Cottonwood Spring. To prevent mosquito propagation, the drinkers will be drained when they are not in use.

Maintenance of the fenceline and drinker system will be the responsibility of the **landowner**. Potential fenceline repairs will occur outside of the cienega. Breakage or damage to the pipeline through the cienega may require retrenching and replacement of the pipeline. In accordance with the Wildlife Management Plan for Cottonwood Springs, the Service will be contacted if repairs in the cienega are required. An attempt will be made to avoid making repairs during winter or summer rains.

In accordance with the Wildlife Management Plan for Cottonwood Spring, TNC, in collaboration with the AGFD, will be responsible for monitoring Gila topminnow, Huachuca water umbel, and Huachuca springsnail populations. The Wildlife Management Plan is available in the AZES. Monitoring surveys will entail photomonitoring at designated locations and visual surveys of Gila topminnow, Huachuca water umbel, and Huachuca springsnail populations. Data to be collected includes presence/absence of Gila topminnow, any noticeable changes in population between Gila topminnow and longfin dace (***Acosia chyrsoqaster***), and any changes in distribution over time. AGFD has a permit to net fish during surveys and to take voucher specimens. TNC does not have a permit to net **fish**.

Huachuca water umbel surveys will entail estimating the location, length, and width of each patch along permanent transects and the density of leaves. No plants will be collected.

Visual surveys of the Huachuca **watersnail** population will be conducted to determine presence/absence of the species in the vicinity of the spring. The filter for the solar pump will also be examined to determine if the snails are caught in the **filtration** unit of the pump. Any snails removed during maintenance of the **filter** will be returned to the mouth of the spring. No snails will be collected.

Potential changes in the hydrologic characteristics of Cottonwood Spring and the cienega habitat will also be monitored. Base flow velocity will be measured at the mouth of the spring twice a year during Gila topminnow surveys. In addition, changes in the extent of the wetted area through the cienega relative to pre-project conditions will be monitored on a quarterly basis.

VII. Species of Concern

Gila topminnow was listed as an endangered species on March 11, 1967. No critical habitat has been designated for this species. Gila topminnow is a small, 25 to 50 mm long, livebearing fish (Minckley 1973) of the family Poeciliidae. It occurs in the Gila, Sonora, and de la Concepcion River drainages in Arizona and New Mexico, United States and Sonora, Mexico (Minckley 1973, Vrijenhoek et al. 1985). The species was once one of the most common fishes in the Gila River and its tributaries (**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/or predation by non-native fish

species, most notably mosquitofish (Gambusia affinis), have resulted in extirpation of Gila topminnow throughout most of its range (Meffe et al. 1983, U.S. Fish and Wildlife Service 1984). At present, Gila topminnow is known from only nine naturally occurring populations in the United States and about 20 reintroduced populations.

Cottonwood Spring supports one of these nine naturally occurring populations. It is one of only three of those natural sites presently free of mosquitofish (Brooks 1986, Simons 1987, Bagley et al. 1991, Brown and Abarca 1992). Gila topminnow are found throughout the Cottonwood Spring area, including the springhead, the canal, the cienega area, and the downstream channel. Longfin dace is the only other fish **species** present. As a large, mosquitofish-free, natural population, the **Cottonwood** Spring Gila topminnow are considered to be very important to the long-term survival of the species.

Huachuca water umbel is a category 1 candidate species. This is a small herbaceous semi-aquatic perennial plant with slender erect leaves that grow from the creeping rootstalks. The leaves are generally less than 3 mm in diameter and average 50 mm in height. There are nine known sites in the United States which support this species between 3,500 and 6,500 feet elevation in southern Arizona and adjacent Sonora, Mexico. It extends from the Rio San Bernardino on the east to Sonoita Creek on the west, and from Tucson on the north (historically) to Cananea, Mexico, on the south. Within that range it is endemic to cienega habitat. Threats to this species include modification of watershed hydrology from groundwater pumping, surface water diversion, impoundment for urban, agricultural, or recreational purposes, overgrazing in the surrounding watershed, and dredging or other direct modification of habitat.

Cottonwood Spring supports one of the nine known populations of Huachuca water umbel. This species is found along two separate stretches of upper Sonoita Creek including the Cottonwood Spring area.

Huachuca springsnail is a category 1 species currently being considered for Federal listing with critical habitat. The Huachuca **springsnail** belongs to the family Hydrobiidae. The shell of this species is 1.7 to 3.2 mm long. This small snail is known from five localities supporting cienegas in southeastern Arizona and two in northeastern Sonora, Mexico. Six of the sites are in the upper Santa Cruz River basin and the remaining one is in the upper San Pedro River basin within a few miles of the Santa Cruz/San Pedro divide. No historic data is available for this species but the decline of cienega habitats in southeastern Arizona is well documented and it is likely that there were originally more populations of this snail within the upper Santa Cruz basin. The Huachuca springsnail occupies shallower areas within the cienega, which are often very limited in size. They are often found in the rocky seep areas at the spring source.

Threats to this species include impoundments and diversions within cienegas. Livestock grazing has significant impacts through direct destruction of the cienega system and through indirect impacts to the watershed, often resulting in extensive erosion and stream downcutting.

Cottonwood Spring supports one of the six known populations of in the upper Santa Cruz River basin. It is found in the springhead and in the ditch leading to the grated springbox located less than 200 feet downstream of the spring.

Southwestern willow flycatcher is listed by the Service as a candidate category 1 species. The Service was petitioned to list the flycatcher

in January 1992. In September 1992, the Service published a notice that the petition presented substantial information; a 12-month finding was due in January 1993. The state of Arizona classifies—the willow flycatcher as endangered (AGFD 1988).

The southwestern willow flycatcher is a riparian obligate species, nesting along rivers, streams, or other wetlands, where dense growths of willows, Baccharis, arrowweed, tamarisk, alders, or other shrubs and medium-sized trees are present, often with a scattered overstory of cottonwood. It nests in thickets of trees and shrubs approximately 13 to 23 feet tall, with a high percentage of canopy cover, and a large volume of foliage from 0 to 13 feet above ground. The nest site plant community is typically even-aged, structurally homogenous, and dense. The breeding range of southwestern willow flycatcher includes southern California, Arizona, extreme southern portions of Nevada and Utah, western New Mexico, and western Texas. It may also breed in southwestern Colorado, but nesting records are lacking. Records of probable breeding southwestern willow flycatcher in Mexico are very few and are restricted to extreme northern Baja California del Norte and Sonora. This species has also been observed in the vicinity of Cottonwood Spring. There is a good potential for breeding populations of southwestern willow flycatcher to occur along Sonoita Creek based upon nesting records from the upper San Pedro and Santa Cruz Rivers in southeastern **Arizona**.

The southwestern willow flycatcher has declined dramatically in recent decades. This decline resulted from a number of factors, including loss and fragmentation of riparian habitat, brood parasitism by brown-headed cowbirds (Molothrus ater), invasion of riparian habitat by the exotic tamarisk (Tamarix sp.), and predation.

VIII.Explanation of impacts of action:

Potential adverse affects to the Gila topminnow include being **pumped** into the pipeline when water is diverted for the livestock watering tanks and subsequent loss of some individuals. Loss of some individuals may occur in the drinkers which are seasonally run dry when they are not in use. Adverse affects may also occur from short-term habitat damage and killing of individuals when the trench is dug to bury the pipeline across the cienega. The Huachuca springsnail **may** be similarly affected by trench construction.

The Gila topminnow population will benefit from this project in the long-term due to improved habitat conditions resulting from livestock removal from the cienega. The maximum flow that will be pumped from Cottonwood Spring at any one time is less than 10 percent of the total volume of flow emitting from the spring. In addition, it is estimated that a maximum of 1500 gallons per day will be pumped **out** of the spring during peak use of the area by cattle. This is an insignificant amount of water being diverted based upon an average rate of discharge from the spring of 75 gpm, therefore, it is anticipated that this small drop in water volume in Sonoita Creek will not have a significant effect on the Gila topminnow population.

Adverse affects to the Gila topminnow and the Huachuca springsnail will be reduced by placing a microfilter and a metal screen on the water filter to reduce the total number of fish or snails pulled into the filter or pump.

The amount of flow to be diverted from the spring is not likely to adversely affect the Huachuca water umbel population on this portion of Sonoita Creek. Trench construction may result in the loss of some

individual plants. This population will be monitored annually to determine if the small fluctuations in the natural hydrology of this system may be adversely **affecting** the condition of the **Huachuca** water umbel population.

Impacts from trench construction through the cienega will be reduced by minimizing the area of disturbance by hand digging the trench, backfilling the trench, and resodding. Trench construction will occur during the spring after the cienega has had the opportunity to dry out from winter runoff.

The Huachuca springsnail may be adversely affected by project implementation including being pulled into the filter in Cottonwood Spring and, as discussed above, trench construction. Diverting water out of Cottonwood Spring is not expected to adversely affect the snail population as **approximately** only 10 percent of the flow will be diverted at any time.

This project will not adversely affect the southwestern willow flycatcher. Construction and repair of the fence line and installation of the pump **system** will not result in the removal or degradation of riparian woody habitat required by the flycatcher. Removal of the cattle from the cienega and much of the surrounding mesquite bosque habitat is expected to result in greater natural regeneration of woody riparian habitat used by this species. Exclusion of livestock from nesting habitat will also prevent physical disturbance of nests by livestock, a threatened threat.

Monitoring will not adversely affect any of these Huachuca water umbel, Huachuca springsnail, or southwestern willow flycatcher. Capture of Gila topminnow by net will be under **AGFD** subpermit and will have short-term adverse and long-term beneficial effects on the species. No plants or snails will be taken during monitoring of the Huachuca water umbel or Huachuca springsnail.

If during monitoring it is determined that special status species are being adversely affected by this project, then appropriate consultation will be reinitiated.

IX. Effect determination and response requested:

A. Listed species/critical habitat:

<u>Determination</u>	<u>Response requested</u>
<input type="checkbox"/> will not affect (species: _____)	<input type="checkbox"/> concurrence
<input type="checkbox"/> is not likely to adversely affect (species: _____)	<input type="checkbox"/> concurrence <input type="checkbox"/> formal consultation
<input checked="" type="checkbox"/> is likely to adversely affect (species: Gila <u>topminnow</u>)	<input checked="" type="checkbox"/> formal consultation
<input type="checkbox"/> undetermined effect (species: _____)	<input type="checkbox"/> informal consultation

B. Proposed species/proposed critical habitat

<u>Determination</u>	<u>Response requested</u>
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will not **affect** (species: _____) cc,ncurrence
 is not likely to adversely affect (species: _____) concurrence
 is likely to adversely affect (species: _____) concurrence
 is likely to jeopardize/ adverse modification of critical habitat (species: _____) concurrence
 undetermined effect (species: _____) informal consultation

C. Category 1 candidate species

<u>Determination</u>	<u>Response requested</u>
<input type="checkbox"/> will not affect (species: _____)	concurrency
<input checked="" type="checkbox"/> is not likely to adversely affect (species: <u>Southwestern willow flycatcher; Huachuca water umbel</u>)	<input checked="" type="checkbox"/> concurrency informal consultation
<input checked="" type="checkbox"/> is likely to adversely affect (species: <u>Huachuca spring-snail</u>) undetermined effect (species: _____)	<input checked="" type="checkbox"/> concurrency informal consultation

D. Remarks

Although this proposed project will adversely affect Gila topminnow in the short term, the long-term benefits accrued .by this project will outweigh adverse affects. This project may also adversely affect the Huachuca water umbel and Huachuca springsnail in the short-term. Long-term affects are expected to **be** beneficial due to **protection** of species habitat from removal of cattle.

IX. Reviewing office evaluation:

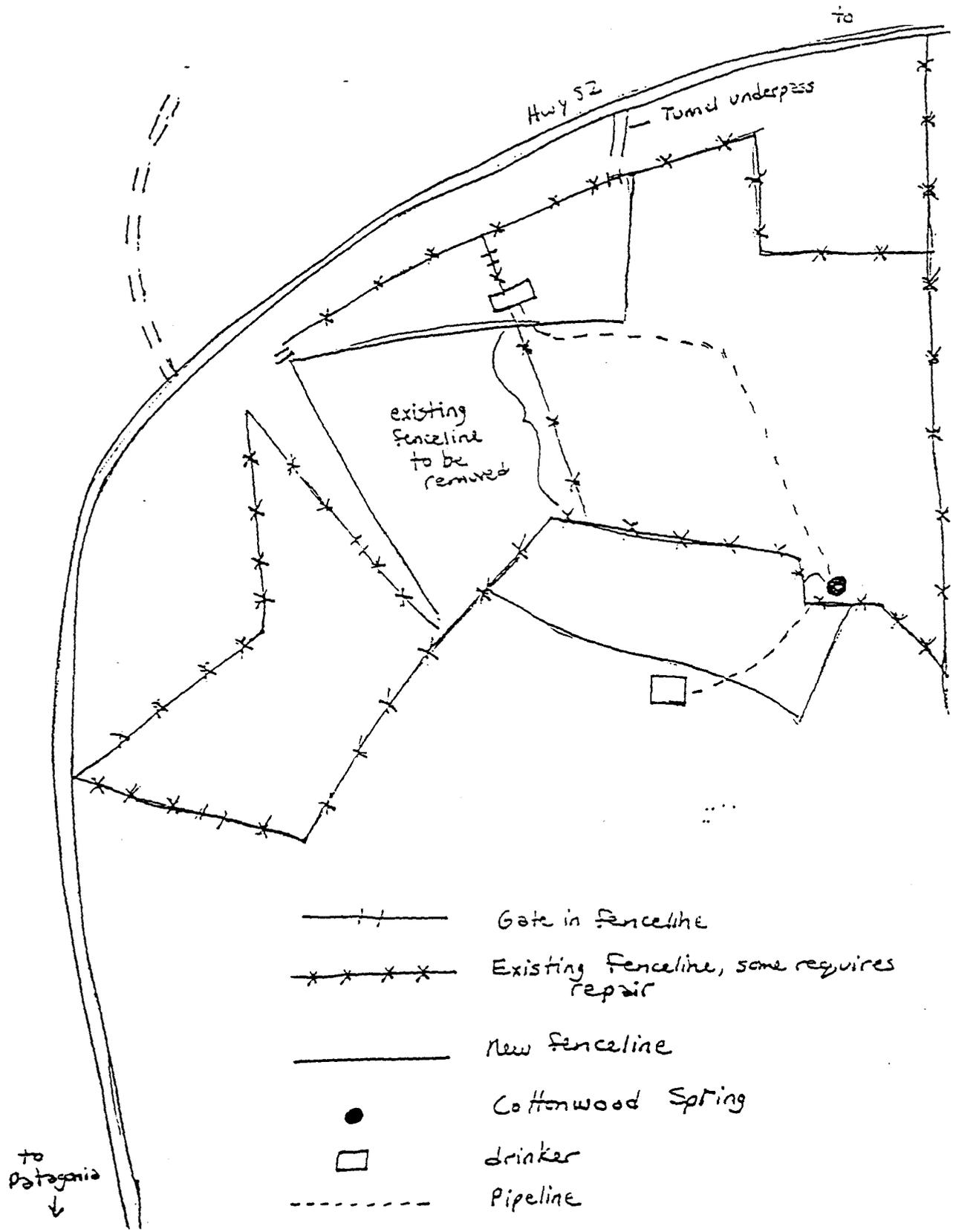
A. Concur Nonconcurrency

B. Comments:

Signature

Literature Cited

- Arizona Game and Fish Department; 1988. Threatened native wildlife in Arizona. Arizona Game and Fish Department Publication. Phoenix, AZ. 32 pp
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- Brooks, J.E. 1986. Status of natural and introduced Sonoran topminnow (Poeciliopsis o. occidentalis) populations in Arizona through 1985. Report to U.S. Fish and Wildlife Service, Office of Endangered Species, Albuquerque, NM. Arizona Game and Fish Dept., Phoenix, AZ. 34 pp.
- Brown, M. and F.J. Abarca. 1992. An update status report of the Sonoran topminnow (Poeciliopsis occidentalis) and desert pupfish (Cyprinodon macularius) in Arizona. Special Report on Project E5-2, Job 9. Arizona Game and Fish Department, Phoenix, AZ. 39 pp.
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- Meffe, G.K., D.A. Hendrickson, W.L. Minckley, and J.N. Rinne. 1983. Factors resulting in the decline of the endangered Sonoran topminnow (Atheriniformes: Poeciliidae) in the United States. Biological Conservation. 25(2):135-159.
- Minckley, W.L. 1973. Fishes of Arizona. Arizona Game and Fish Department. Phoenix, AZ. 293 pp.
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- U.S. Fish and Wildlife Service. 1984. Gila and Yaqui topminnow recovery plan. U.S. Fish and Wildlife Service, Albuquerque, NM. 56 pp.
- Vrijenhoek, R.C., M.E. Douglas, and G.K. Meffe. 1985. Conservation genetics of endangered fish populations in Arizona. Science 229:400-402.



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Figure not to scale



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
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March 26, 1993

DFRT
File

MEMORANDUM

TO: Field Supervisor, Fish and Wildlife Service, Ecological Service,
Albuquerque, New Mexico

FROM: Acting Field Supervisor

SUBJECT: Intra-Service **Biological** Evaluation, Cottonwood Spring
Comerative Agreement, Santa **Cruz** County, Arizona

Per your conversation with **Jay** Slack, Arizona **Ecological** Services (AZES), attached is the Intra-Service Biological Evaluation for Cottonwood **Spring**. We **request** your concurrence on the Biological Evaluation. With the anticipated determination that this project is likely to adversely affect the endangered Gila topminnow, we request that your office prepare an intra-Service biological minion on this project. Marie Sullivan, Private Lands Biologist (AZES), has discussed this consultation with Jerry Burton, New Mexico ES. Information that may assist in the preparation of the biological opinion has been attached and also is included in the attached computer disk.

Cottonwood Spring is a pilot Partners for Wildlife cooperative agreement with a private **landowner** and The Nature Conservancy. In addition to supporting the Gila **topminnow**, this area provides valuable riparian and cienega habitat for numerous Federal trust **species**.

If you have any additional questions, please contact Marie Sullivan, Sally Stefferud, or Sam Spiller, Field Supervisor.


Frank M. Baucom

Attachments

cc: Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico
(AES)