

**United States Department of the Interior  
U.S. Fish and Wildlife Service  
2321 West Royal Palm Road, Suite 103  
Phoenix, Arizona 85021  
Telephone: (602) 242-0210 FAX: (602) 242-2513**

AESO/SE  
22410-2006-F-0006

May 9, 2006

Memorandum

To: Field Manager, Hassayampa Field Office, Bureau of Land Management, Phoenix, Arizona

From: Field Supervisor

Subject: Biological Opinion for Activities Affecting the Gila Topminnow and Desert Pupfish at Buckhorn Spring, and Desert Pupfish at Tule Creek

Thank you for your memorandum requesting formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). We received your September 19, 2005 correspondence on September 21, 2005. At issue are impacts that may result from current livestock grazing management, wild burro management, placer mining, and recreation on the Gila topminnow (*Poecilliopsis occidentalis occidentalis*) and desert pupfish (*Cyprinodon macularius*) proposed for release into Buckhorn Spring, and desert pupfish proposed for release into Tule Creek, Yavapai County, Arizona, on Bureau of Land Management (BLM) administered lands within the Phoenix District. The actual Gila topminnow and desert pupfish stockings are covered under Arizona Game and Fish Departments' (AGFD) 10(a) 1(A) permit and are not addressed in this biological opinion.

This biological opinion is based on information provided in the September 2005 biological assessment, numerous telephone conversations, and other sources of information. References cited in this biological opinion are not a complete bibliography of all references available on the species of concern, the proposed activities and their effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

**CONSULTATION HISTORY**

- February 21, 1991. The FWS issued a biological opinion (file number 2-21-91-F-060) to the BLM for riparian exclosure construction on Tule Creek and its effects on Gila topminnow.
- March 28, 1991. The FWS issued an amendment to biological opinion (file number 2-21-91-F-060) to the BLM for the riparian exclosure construction on Tule Creek and its effects on Gila topminnow.

- September 6, 2005. BLM submitted draft biological assessment for the Draft Bradshaw-Harquahala and Agua Fria National Monument Resource Management Plans and Environmental Impact Statements.
- September 19, 2005. BLM requested the initiation of formal consultation on these proposed actions.
- October 5, 2005. FWS initiated formal consultation.
- December 27, 2005. FWS sent the draft Biological Opinion sent to BLM.
- April 5, 2006. BLM provided comments on draft Biological Opinion to FWS.

## **BIOLOGICAL OPINION**

### **DESCRIPTION OF THE PROPOSED ACTION**

This consultation addresses the effects of the proposal by the Hassayampa Field Office (HFO) in coordination with the AGFD, to manage Gila topminnow and desert pupfish in Buckhorn Spring and desert pupfish at Tule Creek, while continuing livestock grazing under the current grazing program, wild burro management, and recreation management. The primary purpose of the proposed action is to establish Gila topminnow in one site and desert pupfish in these two sites. Low-level recreation includes off-highway vehicle use, hunting, hiking, and camping. Placer mining is also permitted in the action area. These allotments are located within the Castle Hot Springs Management Unit (MU), which is bounded by State Route 74 (Carefree Highway) on the south, Prescott National Forest on the north, Black Canyon MU on the east, and Hassayampa MU on the west. The action area for this biological opinion include Tule Creek and Buckhorn Spring and their upper watersheds (approximately 2.75 and 1.75 mi<sup>2</sup>, respectively) and the drainages which lead from the release sites downstream to Lake Pleasant.

The continued livestock management will occur on the Boulder Creek and Buckhorn allotments. Buckhorn Spring (T. 8N., R.2W., Sec. 28) is located in a small side canyon of Buckhorn Creek in the Buckhorn Allotment, approximately 13 miles northwest of Lake Pleasant. The Buckhorn Allotment includes a mix of State, BLM and private lands. The allotment is approximately 15,689 acres in size, of which 6,789 acres are BLM, 5,270 acres are State, and 1,040 acres are privately controlled (owned by the livestock permittee). Approximately 2,600 acres of private lands not associated with the allotment occur within the allotment boundary. The allotment is a cow-calf perennial allotment with an authorized use level of 924 AUMs. Average licensed use over the past 10 years has been 924 AUMs (170 cattle and 5 horses). The perennial reach of Buckhorn Spring was excluded from livestock grazing after the construction of a pipe-rail fence in 2003.

Tule Creek (T. 8N., R. 1 E., Sec. 28 SW ¼ and Sec. 29 NE ¼) is a small perennial stream located within the Boulder Creek Allotment. The Boulder Creek Allotment is a perennial allotment with an authorized use of 5,040 AUMs (600 cattle). Livestock were excluded from approximately 70 acres of land surrounding and including Tule Creek in 1991. The allotment has not had

livestock on it (has been in non-use) in 2004 and most of 2005, due to drought conditions. The Boulder Creek Allotment grazing permit changed ownership and was stocked with livestock in December 2005. Water is available for livestock outside the enclosure.

Both of the Boulder Creek and Buckhorn allotments are scheduled for evaluation and permit renewal in 2007.

## **STATUS OF THE SPECIES/CRITICAL HABITAT**

### **A. Gila Topminnow**

**Listing History:** The Gila topminnow was listed as endangered, without critical habitat, in 1967 (USFWS 1967). The reasons for decline of this fish include past dewatering of springs and marshlands, impoundments, channelization, diversion, regulation of flow, land management practices that promote erosion and arroyo formation, and the introduction of predacious and competing non-native fishes (Minckley 1985, Minckley and Deacon 1991, Miller 1961). The original Recovery Plan was approved in 1984 (USFWS 1984). A revised Recovery Plan was drafted in 1994, but was never finalized (Voeltz and Bettaso 2003). However, managers generally rely on the replication criteria for natural populations from the draft revised Recovery Plan in managing Gila topminnow populations (Voeltz and Bettaso 2003).

**Rangewide Population Status :** In the U.S., the Gila topminnow has a historical range that includes the Gila River and tributaries from New Mexico to the Colorado River. Currently, there are 14 remaining natural topminnow sites (Weedman 1998) in Arizona. Twenty-three sites on BLM land in Arizona have been stocked with Gila topminnow (Voeltz and Bettaso 2003), including the Tule Creek population, which has remained stable. Cooperative efforts by the BLM, Arizona Game and Fish Department, and the FWS to reintroduce topminnow into suitable habitat sites are ongoing.

### **B. Desert pupfish**

**Listing History:** Desert pupfish were listed as endangered with critical habitat in 1986 (U.S. Fish and Wildlife Service 1986). Critical habitat was only designated at Quitobaquito Spring in southwest Arizona. There is no critical habitat within the action area. The desert pupfish Recovery Plan was finalized in 1993 (Marsh and Sada 1993). Primary threats to the species include competition and predation from introduced non-indigenous fish species, water impoundment and diversion, water pollution, channelization, and habitat modification. Additional life history information can be found in the desert pupfish Recovery Plan (Marsh and Sada 1993).

## ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

### A. Action Area Description

**Buckhorn Spring** occurs in the Buckhorn Allotment in the Phoenix BLM District. The allotment is dominated by Sonoran desert vegetation. The stream is small, approximately 0.7 mile in length, and flows through a series of bedrock pools. Approximately 0.5 mile of riparian habitat is protected from livestock grazing by a fenced enclosure constructed in 2003.

The Buckhorn Creek drainage, where the spring is located, has various flow regimes depending upon time of year and climatic conditions. The lower end of Buckhorn Creek consists of large cobbles and sand and is dry except following storm runoff. During storm events, Buckhorn Creek flows approximately five miles until it joins with Castle Creek. Castle Creek continues for 10.4 miles to Lake Pleasant. The majority of Buckhorn and Castle creeks, located on State and private lands, are used as major access roads into the area.

The expected maximum dispersal area for these fish species includes all suitable habitats contiguous with and downstream from the stocking site to the lower enclosure fence boundary. The dispersal area has as its upper limit Buckhorn Spring which drains into Buckhorn Creek.

Suitable habitat exists for pupfish and topminnow in the form of three pools that are maintained by periodic flooding over large boulders that create a shallow “punchbowl” from the prevailing hydraulic forces. The large flood events that have created these pools over time also have the energy to remove tree roots and other vegetation. Even modest flood events (2-5 year return interval) may entrain fish, moving them downstream into the narrow channel. Where the gradients are relatively steep and the floodplain is not wide enough to provide refuge from high velocities for fish to reside in until a flood subsides. The desert pupfish and Gila topminnow may need population replacement or augmentation following low to moderate flood events.

Any fish moving below the enclosure into lower Buckhorn Creek, Castle Creek, or downstream to Lake Pleasant will be outside of suitable habitat and subject to 100% mortality from desiccation or consumption by non-native fishes. Lake Pleasant is occupied by predacious and competitive non-native fishes and is not considered suitable habitat for either desert pupfish or Gila topminnow. Because the desert pupfish and Gila topminnow will not survive outside of the action area, future actions authorized or carried out by BLM or private land owners within or along Buckhorn Creek or Castle Creek, will not affect these species.

AGFD identified Buckhorn Spring as a potential stocking site for both Gila topminnow and desert pupfish (Voeltz and Bettaso 2005). Baseflow from the spring appears small but adequate to support both topminnow and pupfish (Simms 2004b). AGFD plans to stock 250 to 500 individuals of both species at this site. The source stock for these fish is the Boyce-Thompson Arboretum located at Superior, Arizona (J. Voeltz, AGFD Biologist, pers., comm. October 11, 2005).

Because of the ease in obtaining Gila topminnow for stocking purposes, Gila topminnow may be introduced initially, followed by the stocking of desert pupfish. However, if pupfish become readily available, both species could be stocked simultaneously. Supplemental stockings of these species will be carried out, as necessary, until a self-sustaining population of each species is established, or until it is determined through monitoring that the site cannot support self-sustaining populations. The determination as to whether the stocking efforts should be discontinued will be reached jointly by the BLM and AGFD. Annual monitoring of reintroduced fish populations to determine stocking success and evaluate the need for supplemental stockings will be a coordinated effort between the BLM, AGFD, and the FWS.

**The Tule Creek** release site is located 5.6 miles upstream from Lake Pleasant on the Agua Fria River. Access to this portion of Tule Creek is gained only via a 4-wheel drive road which is barricaded downstream of the release site. The Bureau of Reclamation (BOR) constructed a non-native fish barrier in 1991 to prevent invasive fish species from traveling upstream into the perennial reaches of Tule Creek during flood flow events. Tule Creek is dry or intermittent for most of its length downstream of the release site.

Tule Creek is dominated by Sonoran desert vegetation. This stream is small, approximately three miles in length, of which approximately 0.5 mile of perennial flow is protected from livestock grazing and vehicle use by a fenced enclosure constructed in 1992. The habitat inside the enclosure consists of a series of pools and cobbled runs with abundant emergent vegetation. The active channel is bordered by large cobbles and boulders. Large flood events have occurred in 1981 and 1993, which scoured out the dense vegetation. Gila topminnow were re-stocked after the 1981 event; they persisted at the site after the 1993 event. As a result of these flood flow events, water does collect downstream of the enclosure. Fish may be present in these locations; however, they are susceptible to desiccation as these temporary habitats dry out. The perennial portions of Tule Creek, and the approximately two miles of intermittent creek below the enclosure, are administered by BLM.

AGFD identified Tule Creek as a suitable stocking site for desert pupfish (Voeltz and Bettaso 2005). Supplemental stockings of desert pupfish will be carried out, as necessary, until a self-sustaining population is established, or until it is determined through monitoring that the site cannot support a self-sustaining population. AGFD plans to stock 250 to 500 desert pupfish at this site. The source stock for these fish is the Boyce-Thompson Arboretum (J. Voeltz, AGFD, pers. comm., October 11, 2005).

The decision on whether the fish stocking efforts should be discontinued will be reached jointly by the BLM and AGFD. Annual monitoring of the introduced pupfish population, to determine

stocking success and evaluate the need for supplemental stockings, will be conducted as a cooperative effort between the BLM, AGFD, and the FWS.

Desert pupfish will be stocked in several pools at the upper end of the enclosure and allowed to disperse (Simms 2004b). The expected maximum dispersal area includes all suitable habitats for this species contiguous with and downstream from the stocking site. The dispersal area has as its upper limit the enclosure boundary fence. Fishes found below the enclosure may persist in ephemeral pools, as long as conditions remain favorable. These ephemeral pools may hold water for several years during wet cycles but are subject to cattle and burros and will dry up during years with average or below-average precipitation. Downstream of the enclosure, neither Tule Creek nor Lake Pleasant is considered suitable habitat for desert pupfish. Any movement of the fish below the enclosure and into the Agua Fria River or Lake Pleasant will be considered temporary and subject to 100% natural mortality due to desiccation.

Flowing habitats are generally absent due to the dense marsh vegetation that slows water velocities and spreads the water surface over a large width. Thus, runs and riffles are absent. Suitable habitat exists for pupfish in the form of four pools that are maintained by periodic flooding and increased energy provided by small waterfalls at the top of the habitats. The large flood events that have created the pools over time also have the energy to remove vegetation and entrain fish, moving them downstream. This is likely as the gradients are relatively steep and the floodplain is not wide enough to provide refuge from high velocities for fish to reside in until the floods subside. The desert pupfish and existing Gila topminnow population may need population replacement or augmentation following large flood events.

There are actions proposed in the draft Bradshaw-Harquahala Resource Management Plan that would provide further protections to these fish in Tule Creek and Buckhorn Spring. If approved in the final plan, they would serve as conservation measures to protect these two species. These proposed actions are:

- 1) The Castle Hot Springs Management Unit would be allocated as a limited use area, with motorized and mechanized vehicle uses limited to designated routes.
- 2) The 640 acres including and surrounding the Tule Creek action area would be designated as an Area of Critical Environmental Concern (ACEC).
- 3) The designated Tule Creek ACEC would be withdrawn from mineral entry and closed to mineral and geothermal leasing and to mineral material disposal.
- 4) The fenced area within the Tule Creek ACEC (640 acres) will continue to be closed to motor vehicles and domestic livestock grazing.
- 5) The enclosure fences at Tule Creek and Buckhorn Spring will be inspected twice annually.

## **B. Status of the Species within the Action Area**

### **Gila Topminnow**

The Gila topminnow is currently present in Tule Creek. The Tule Creek population was originally stocked in 1968 and supplemented in 1981 following floods in 1978. Both stockings were made with stock from Monkey Springs by way of Boyce-Thompson Arboretum. The Tule Creek population underwent a significant population decrease following floods during January 1993. The population has recovered to the point where topminnows are common in permanent water throughout the area. Gila topminnows are not currently present in Buckhorn Spring, although suitable habitat exists.

The perennial portion of Tule Creek was fenced to exclude livestock use of the riparian habitat in 1991. Shortly after the fence was constructed, the water backed upstream and dried up below the enclosure. In 1991, a pipeline and drinker were installed to provide water for livestock outside the enclosure. During the following two years, the enclosure experienced repeated vandalism followed by repair and maintenance. In 1993, floods scoured the channel, taking out both the upper and lower water gaps and the pipeline and drinker installed in 1991. During the summer of 1993, BLM rebuilt the water gaps and installed pipe rail fences, a swinging steel gate, and an interpretive sign. Since that time, vandalism has been infrequent and the enclosure has remained relatively intact. The permanent water now persists further upstream and downstream than it did prior to fencing. Topminnow currently occur throughout the stream within the enclosure and downstream of the enclosure for approximately 0.25 mile during wet years. The stream below the enclosure dries up during most summers and during periods of prolonged drought.

## **B. Factors affecting species' environment within the action area**

Actions within the project area that may affect Gila topminnow are limited to livestock and wild burro grazing, mining, and recreation. Livestock grazing has been ongoing in the action area for years. It is BLM policy that the Land Health Standards for uplands, riparian and desired plant communities would be emphasized and applied to all activities and actions in the action area, and all authorized activities must conform to the standards. These standards provide a minimum level of acceptable conditions for both riparian and upland sites. Both of these grazing allotments are scheduled for Standards and Guidelines evaluations in 2007. Priority species, such as Gila topminnow and desert pupfish and their habitats, will be given priority in resolving conflicts between resource uses. Emphasis will be placed on the maintenance and restoration of biological diversity and reduction of invasive species.

The Tule Creek release site is excluded from livestock grazing by an enclosure fence. Limited livestock use occurs in the adjacent watershed due to steep topography. Actual livestock impacts to Tule Creek are likely to be rare due to the BLMs' routinely scheduled enclosure inspections. Wild burro use has not been documented as an impact to Tule Creek (L. Young, BLM, pers. comm., October 11, 2005). Burros enter the enclosure to drink but streambank trampling or

excessive use of vegetation has not been documented during annual inspections (T. Hughes, BLM, pers. comm. April 5, 2006).

Recreation impacts are increasing on the District and on the allotment. Access to Tule Creek is limited to foot-traffic. The road leading to this site is barricaded to prevent vehicular access (L. Young, BLM, pers. comm., October 11, 2005).

### **Desert pupfish**

Desert pupfish do not occur within the action area at this time. Suitable habitat exists at both proposed release sites.

## **EFFECTS OF THE PROPOSED ACTION**

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

### **A. Livestock Grazing**

Livestock grazing can affect Gila topminnow and desert pupfish and the viability of these populations. Typically, the main impacts from cattle on wetland areas and springs 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). These livestock effects can be anticipated when the enclosure fences are damaged from large flood flows, similar to events that have taken place in the past (BLM 2005). The modest to large flood events (2-5 years return period) that occur at both release sites have the energy to remove tree roots and other vegetation (Simms 2001a). It is also anticipated that these flood flows can damage the enclosure fences. Concentrations of livestock on these wetland habitats, particularly in the summer, will result in fish mortality from water-quality deterioration and/or decreased surface water supply from livestock consumption. However, as previously mentioned, the topminnow population has thrived in the presence of livestock at Tule Creek for 37 years. Even with occasional compromise of the enclosure, the twice annual inspection and maintenance is expected to allow the newly established Gila topminnow and desert pupfish populations to persist into the foreseeable future in the presence of continued livestock grazing under existing management.

The Guidelines for Grazing Administration will be applied in order to meet the Land Health Standards, with priority emphasis on those areas that may impact Gila topminnow and desert pupfish. The Guidelines include restoration of T/E habitat. Specific allotment management information for each release site is as follows:

Buckhorn Spring/Creek Livestock use would be expected to remain the same unless monitoring indicates that changes are necessary due to watershed or riparian degradation. Livestock will continue to be excluded from approximately 0.5 mile of Buckhorn Spring with the livestock exclosure. Water will continue to be piped from the spring to a livestock trough outside the exclosure. The pipeline is buried, with an installed well-screen, in the exclosure. Fish and young fry are unable to enter and travel through this pipeline to the outside trough. This area is not expected to be extensively used by livestock due to the steep, rugged terrain (L. Young, BLM, pers. comm., October 6, 2005).

Tule Creek Livestock grazing would continue at currently authorized levels on the available uplands unless monitoring detects that resource damage is occurring. Although some adverse effects to both species are expected, including temporary loss of habitat and habitat disturbance, the species are expected to persist. This is evidenced by the continued presence of Gila topminnow at Tule Creek on the Boulder Creek Allotment since 1968.

## **B. Recreation**

Recreational use in the vicinity of Tule Creek is expected to continue to be light and dispersed, generally associated with hunting, sightseeing, and off-highway vehicle use up to the exclosure fence. The pipe-rail exclosure fence, at the access points, situated so as to block an old mining road that crossed the creek in several places. The four-wheel drive road will continue to be used by off-highway vehicles.

Recreational use in the vicinity of Buckhorn Creek is expected to continue to be light and dispersed, generally associated with sightseeing, equestrian use, and hunting. Buckhorn and Castle creeks are large washes that also serve as a road to many private in-holdings in the Lake Pleasant-Castle Hot Springs area. They will continue to serve as a transportation network for off-highway vehicle use. During wet years, most of Castle Creek has ephemeral to low flows. Moderate to high flows make the wash impassable. The presence of numerous parcels of State and private lands which must be crossed to access this site will continue to limit recreational use (L. Young, BLM, pers. comm., October 11, 2005).

## **C. Wild Burros**

Tule Creek occurs within the 80,800 acre Lake Pleasant Burro Herd Management Area (BLM 1999). Wild burros are regularly seen using trails along both sides of the creek, within the exclosure. Aerial surveys for the Lake Pleasant Burro Herd Management Area were last conducted in 1999. Two hundred and five wild burros were estimated to occur here. Despite the wild burro presence, the Gila topminnow has persisted at this site since 1968. The BLM does not specifically monitor burro use of vegetation within the exclosure; however, the site will continue to be inspected once or twice annually. Obvious evidence of wild burro use has not been observed in Tule Creek; burros are seen in the uplands on an old mining road in the exclosure (L. Young, BLM, pers. comm., October 7, 2005).

Buckhorn Creek is outside the Lake Pleasant Burro Herd Management Area. However, wild burros are found throughout the area and may continue to use Buckhorn Creek for water or forage. Wild burro effects can be anticipated when the enclosure fences at either release site are damaged from large flood flow, similar to events that have taken place in the past (BLM 2005). Wild burro use has never been measurable in Tule Creek or at Buckhorn Spring, even in the summer (T. Hughes, BLM, pers. comm., April 4, 2006).

#### **D. Mining**

Three active placer mining claims are located on Buckhorn Creek approximately one mile below the enclosure fence. There are no chemicals used in this mining operation. The existing road in Buckhorn Creek and Buckhorn Spring's presence in a side canyon of Buckhorn Creek will prevent upstream erosional events from the placer mines from affecting the spring (L. Young and T. Hughes, BLM, pers. comm., October 27, 2005). The Buckhorn Spring fish populations may be washed downstream from the stocking site below the enclosure into Buckhorn Creek, where the three placer claims are located. Some fish may remain in residual pools on the claims. These fish would be expected to succumb to desiccation as the pools dried up. The mining activity is located in the non-perennial flowing reaches of Buckhorn Creek.

There is currently no mining activity in Tule Creek. Tule Creek would not be effected by future mine claims if the ACEC proposal to remove this area from mineral entry in the new land use plan is approved. If this area is not removed from mineral entry, mining could occur and may expand farther into Tule Creek in the future, subject to existing regulations including the Act.

#### **CUMULATIVE EFFECTS**

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this 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 the Act.

The Buckhorn Spring and Tule Creek watersheds and the transplant sites are primarily BLM-administered lands, with upper watershed portions on State Land. Both watersheds consist of steep terrain, with little development potential. The action area downstream of Tule Creek is BLM-administered to Lake Pleasant. The concrete barrier constructed by BOR prevents non-native fish from the lake from traveling upstream to the Tule Creek release site. The very poor road conditions in Tule Creek limits access to the release site from downstream State and private lands. Lake Pleasant management also precludes residential development in the area. Buckhorn Canyon, downstream of Buckhorn Spring, consists of a dry wash that transverses State and private land to Lake Pleasant. Buckhorn Spring's location in a side canyon, within a remote area, reduces any cumulative effects that may arise from these other land ownerships.

Failure of the Tule Creek enclosure fence resulting from vandalism may allow unauthorized off-highway vehicle use in the enclosure area. This may adversely affect both fish species if vehicle

use degrades habitat and degrades water quality from excessive sedimentation and erosion from collapsed banks. Unauthorized livestock may access the enclosure area when the enclosure is damaged. If this occurs, particularly in the spring-summer, concentrated livestock may adversely affect topminnow and pupfish or their habitat, decrease water quality, or decrease surface water volume from livestock consumption.

## CONCLUSION

After reviewing the status of the Gila topminnow and desert pupfish, the environmental baseline for the action area, the effects of the proposed activities, and the cumulative effects, it is our biological opinion that these actions, as proposed, are not likely to jeopardize the continued existence of either of these species.

This finding is based on the following factors:

- 1) There are numerous stocked and natural populations of these two species within their range. The source populations for these transplants are captive-reared fish. Wild fish would not be removed from existing populations and transplanted as part of this proposal.
- 2) Both transplant sites would receive a high degree of protection. Although impacts to the watersheds will continue, both introduction sites are excluded from the direct effects of livestock grazing. The Buckhorn Spring desert pupfish population would fall under “tier 3” of the Desert Pupfish Recovery Plan (USFWS 1993). These populations require major management intervention to persist and will receive a high degree of protection. Buckhorn Springs’ location within a narrow canyon and past evidence of scouring floods necessitates the need to closely monitor this population and augment when necessary after large flood events (Simms 2004b). The Gila topminnow population would fall under this same tier, once the draft revised recovery plan is approved (Simms 2004b). The Tule Creek desert pupfish population once established; would fall under “tier 2” of the Recovery Plan. These populations require only minor management intervention to persist and will receive a high degree of protection. The Tule Creek populations would not be exposed to the flashy, scouring flood flows at the same frequency as the Buckhorn Spring population (Simms 2004a, J. Simms, BLM, pers. comm. October 12, 2005).

## INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. “Harm” is defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. “Harass” is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which

include, but are not limited to, breeding, feeding or sheltering. “Incidental take” is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

## **I. AMOUNT OR EXTENT OF TAKE**

We anticipate that fish will be swept from the enclosed perennial habitats downstream to occur unsuitable ephemeral habitat as a result of flood events. These flood events are anticipated to occur every two to five years (Simms 2004a, 2004b). Take will follow primarily in the form of death or injury to the species from cattle grazing and the physiological effects of reduced water quality, or loss of habitat through sedimentation or dewatering.

We anticipate that take of Gila topminnow or desert pupfish would be difficult to detect and quantify because they have a small body size and they are highly fecund; thus, rapid reproduction of the species may mask any population decline resulting from the take. Therefore, it is not possible to provide precise numbers of Gila topminnow or desert pupfish that could be harmed, injured, or killed as a result of effects of livestock or wild burro grazing within or around either enclosure. Regular enclosure inspections were included as a term and condition to the Tule Creek Riparian enclosure biological opinion (FWS file number 2-21-91-F-060). These twice annual inspections have been incorporated into the Bradshaw-Harquahala Final Resource Management Plan (2006) as part of the proposed action (FWS file number 2-21-05-I-0785). Records of enclosure and gap fence monitoring and maintenance shall be maintained. Enclosure maintenance, repair, livestock intrusion, and other relevant information will be furnished to the FWS as part of an annual report.

Given that fish may be displaced when they are carried downstream of the enclosure fence during flood events, low levels of take may also result when these fish succumb to impacts from burro use of these areas; or when vehicles crossing the road at this site drive through the water. Due to the ephemeral nature of these habitats below the enclosures, any fish present will eventually die from desiccation, regardless of the adverse effects from the above mentioned BLM-authorized activities. Take would be exceeded if livestock gain access to either enclosure area and causes the loss of the entire pupfish or topminnow population at that site.

## **II. EFFECT OF THE TAKE**

In this biological opinion, we determined that this level of anticipated take is not likely to result in jeopardy to Gila topminnow or desert pupfish. This is due primarily to the project’s main purpose which is to improve habitat for native fish and establish a new population of Gila topminnow or desert pupfish, and adverse effects will be rare.

### **III. REASONABLE AND PRUDENT MEASURES and TERMS AND CONDITIONS**

In order to be exempt from prohibitions of section 9 of the Act, the BLM must comply with the following terms and conditions, which implement the reasonable and prudent measures and outline required reporting and monitoring requirements. These terms and conditions are non-discretionary.

The proposed action incorporates terms and conditions from previous biological opinions which include twice annual exclosure inspections to protect topminnow and desert pupfish from the adverse effects of livestock grazing (FWS file numbers 2-21-91-F-060 and 2-21-05-I-0785). Take would occur after fish are swept from the exclosure areas into ephemeral reaches of Tule Creek and Buckhorn Canyon and die as a result of ongoing livestock or off-highway vehicle use in the area. These fish will eventually die when the water evaporates. This is beyond the control of BLM-management. Take may also occur when livestock access either exclosure at a time when the fence is damaged.

The following reasonable and prudent measure and term and condition are necessary and appropriate to minimize the effects of take of Gila topminnow and desert pupfish.

1. Conduct all proposed actions in a manner that will minimize take of Gila topminnow and desert pupfish.
  - a. The HFO shall inspect the exclosure fences in addition to the proposed twice annual inspections if it is suspected that a large flood event may have damaged either exclosure fence.

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

Upon finding a dead or injured threatened or endangered animal, initial notification must be made to the Fish and Wildlife Service's Law Enforcement Office, 2450 W. Broadway Rd. #113, Mesa, Arizona 85202 (480/967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph, and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact specimens of listed animal species shall be submitted as soon as possible to this office or the nearest AGFD office, educational, or research institutions (e.g., Arizona State University in Tempe) holding appropriate State and Federal permits.

#### **Conservation Recommendations**

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to

minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

We recommend the following:

1. Continue to re-establish Gila topminnow and desert pupfish into suitable habitat on the Hassayampa Field Office. Identify suitable and potential Gila topminnow and desert pupfish habitat. One action plan covering all known suitable and potential sites and all Field Office actions affecting them should be done. Augmentation stocking and management of existing sites should be included (Recovery Plan tasks 1.4, 1.7, 2.1, 2.2, 2.3, 2.6).
2. Discourage the use of non-native aquatic species on the Field Office, and where possible, remove or reduce them (Recovery Plan Tasks 1.5, 1.6, 2.4, 2.5).

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

## **REINITIATION STATEMENT**

This concludes the formal consultation on the Hassayampa Field Office's proposed action. As provided in 50 CFR § 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (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 subsequently modified in a manner that causes an effect to the listed species or critical habitat 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 re-initiation.

We appreciate the Hassayampa Field Office's efforts to identify and minimize effects of the current livestock grazing, wild burro management, and recreation programs on the proposed Gila topminnow and desert pupfish stockings. For further information please contact David Smith (928) 226-0614 x 109 or Debra Bills (602) 242-0210 x 239. Please refer to consultation number 22410-2006-F-0006 in future correspondence concerning this project.

Sincerely,

/s/ Steven L. Spangle  
Field Supervisor

cc: Assistant Field Supervisor, Flagstaff, Arizona  
Assistant Field Supervisor, Tucson, Arizona (ATTN: Doug Duncan)

Bob Broscheid, Habitat Branch, Arizona Game and Fish Department, Phoenix, Arizona.

W:\David Smith\Tule Creek Buckhorn GT and DP stocking BO 5 3 06.doc:bml

**REFERENCES CITED**

- Armour, C. L., D. A. Duff, and W. Elmore. 1991. The effects of livestock grazing on riparian and stream ecosystems. *Fisheries* 16(1):6-11.
- Bureau of Land Management. 1999. Lake Pleasant burro herd management plan. Environmental assessment and decision record. Phoenix Field Office. 31 pp.
- \_\_\_\_\_ 2005. Biological evaluation for the proposed stocking of Gila topminnow and desert pupfish into Buckhorn Spring and desert pupfish into Tule Creek, BLM, Phoenix District.
- Marlow, C. B., and T. M. Pogacnik. 1985. Time of grazing and cattle-induced damage to streambanks. Pages 279-284 in R. R. Johnson, C. D. Zeibell, D. R. Patton, P. F. Ffolliot, and R. H. Hamre, tech. coords. *Riparian Ecosystems and their Management: Reconciling Conflicting Uses*. GTR RM-120, USDA Forest Service, Rocky Mtn. For. & Range Exp. Stn., Ft. Collins, Colo. 523 pp.
- Marsh, P. C. and D.W. Sada. 1993. Desert pupfish (*Cyprinodon macularius*) recovery plan. Prepared by Marsh and Sada for the U.S. Fish and Wildlife Service. Albuquerque, New Mexico. 129 pp.
- Miller, R.R. 1961. Man and the changing fish fauna of the American Southwest. *Pap. Michigan Acad. Sci., Arts, Lett.* 46:365-404.
- Minckley, W.L. 1985. Native fishes and natural aquatic habitats in U.S. Fish and Wildlife Services Region II west of the continental divide. Report to the U.S. Fish and Wildlife Service. Albuquerque, New Mexico.
- Minckley, W.L. and J.N. Deacon. 1991. *Battle Against Extinction: Native Fish Management in the American West*. University of Arizona Press, Tucson, Arizona.
- Simms, J. 2004a. Buckhorn Spring native fish habitat suitability survey of August 2004. Unpubl. Report. BLM Phoenix District. December 17, 2004.
- Simms, J. 2004b. Tule Creek Spring native fish habitat suitability survey of September 2004. Unpubl. Report. BLM Phoenix District. September 30, 2004.
- U.S. Fish and Wildlife Service. 1984. Gila and Yaqui topminnow recovery plan. U.S. Fish and Wildlife Service, Region 2, Albuquerque, NM.

- \_\_\_\_\_. 1986. Endangered and threatened wildlife and plants; determination of endangered status and critical habitat for the desert pupfish. U.S. Fish and Wildlife Service, Phoenix, Arizona.
- \_\_\_\_\_. 1991. Endangered and threatened species of Arizona (with 1992 addendum). U.S. Fish and Wildlife Service, Phoenix, Arizona.
- \_\_\_\_\_. 1993. Desert pupfish (*Cyprinodon macularius*) recovery plan. U.S. Fish and Wildlife Service, Region 2, Albuquerque, NM.
- Voeltz, J.B and R.H. Bettaso. 2003. 2003 Status of the Gila topminnow and desert pupfish in Arizona. Nongame and Endangered Wildlife Program Technical Report 226. Arizona Game and Fish Department, Phoenix, Arizona.
- \_\_\_\_\_. 2005. Gila topminnow and desert pupfish monitoring and management activities on BLM lands in Arizona – October 2003 through 2004. Nongame and Endangered Wildlife Program Technical Report 246. Arizona Game and Fish Department, Phoenix, Arizona.
- Weedman, D.A. 1998. Draft Gila topminnow, *Poeciliopsis occidentalis occidentalis*, revised recovery plan. Prepared by Arizona Game and Fish Department for U.S. Fish and Wildlife Service, Albuquerque, New Mexico, 83 pp.
- Weedman, D.A. and K.L. Young. 1996. Status of the Gila topminnow and desert pupfish in Arizona. Nongame and Endangered Wildlife Program Technical Report 118. Arizona Game and Fish Department. Phoenix, Arizona.