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**U.S. Fish and Wildlife Service**  
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In Reply Refer To:

AESO/SE  
02-21-05-F-0171  
CC2005220  
CC2005337  
CC2006926

October 3, 2006

Mr. Charles Ruerup  
Acting Director, YPG Environmental Service Directorate  
U.S. Army Yuma Proving Ground  
301 C Street  
Yuma, Arizona 85365  
Attn: CSTE-DTC-YP-CD-ES (English), Bldg. 303

Dear Mr. Ruerup:

Thank you for your request for formal consultation pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). We received your request on January 5, 2005. At issue is the management of the Inverted Range Control Complex (IRCC) pond after the Arizona Game and Fish Department (Department) releases fish there. You requested formal consultation on the endangered Gila topminnow (*Poeciliopsis occidentalis*) and desert pupfish (*Cyprinodon macularius*).

This biological opinion is based on information provided in the biological evaluation, personal communications, and other information in our files. References cited in this biological opinion are not a complete bibliography of all references available on the species of concern and effects of the proposed project. A complete administrative record of this consultation is on file at our office.

#### CONSULTATION HISTORY

- January 5, 2005. We received your request for consultation and the biological assessment for the project.
- March 17, 2005. We sent you a draft biological opinion for your review.
- March 17, 2006. We requested an extension of the consultation period.
- August 16, 2006. We received your comments on the draft biological opinion.

## DESCRIPTION OF THE PROPOSED ACTION

The Arizona Game and Fish Department (Department), in coordination with the U.S. Army Yuma Proving Ground (YPG) and the Fish and Wildlife Service (FWS), proposes to establish populations of Gila topminnow and desert pupfish in the Inverted Range Control Complex pond on the YPG. The fish will be obtained from sources containing surplus fish, so no significant effects on source populations are expected. The artificial pond is not in a drainage and has no inlets or outlets to any natural drainage. The pond is about 6,000 ft<sup>2</sup> and approximately 4 feet deep. The 150,000-gallon pond is used as a water source for road maintenance. Because of water use and evaporation, water turnover in the pond is more than 40 times pond capacity. The pond is at UTM Coordinate 11S 743,262E – 3,656,098N. The pond is lined and maintained by pumped groundwater. Water is pumped out of the pond via a hose and pipe. The outlet hose may be screened. If the pond is no longer needed by the YPG, all fish will be removed. Activities that may occur at the pond include pumping water into and out of the pond; maintenance of the pond, including intake and outlet structures; monitoring of water quality and wildlife; and changes in water level from pumping, evaporation, and potential pump failure.

The goal of the project is to create a self-sustaining population of each fish species. In the case of fish population failure, the YPG, Department, and FWS will jointly determine whether the site is suitable for continuing reestablishment efforts of Gila topminnow or desert pupfish. Monitoring of reestablished fish populations to determine stocking success and evaluate the success of the project will be conducted by the Department. Project feasibility will be evaluated no less often than every five years.

## STATUS OF THE SPECIES (range-wide)

### Gila topminnow

The Gila topminnow was listed as endangered in 1967 without critical habitat (USFWS 1967). The reasons for decline of this fish include past dewatering of rivers, springs, and marshlands; impoundment; channelization; diversion; regulation of flow; land-management practices that promote erosion and arroyo formation; and the introduction of predacious and competing nonindigenous fishes (Miller 1961, Minckley 1985). Life history information can be found in the 1984 recovery plan (USFWS 1984), the draft revised Gila topminnow recovery plan (Weedman 1999), and references cited in the plans.

Gila topminnow was listed as *Poeciliopsis occidentalis*. The species was later revised to include two subspecies, *P. o. occidentalis* and *P. o. sonoriensis* (Minckley 1969, 1973). *P. o. occidentalis* is known as the Gila topminnow, and *P. o. sonoriensis* is known as the Yaqui topminnow. *Poeciliopsis occidentalis*, including both subspecies, are collectively known as the Sonoran topminnow. Both subspecies are protected under the ESA. More recent information presented by Minckley (1999), considers the two subspecies to be separate species, *P. occidentalis* and *P. sonoriensis*. Regardless of their taxonomy, both species or subspecies are protected under the Act.

Gila topminnow are highly vulnerable to adverse effects from nonindigenous aquatic species (Johnson and Hubbs 1989). Predation and competition from nonindigenous fishes have been a

major factor in their decline and continue to be a major threat to the remaining populations (Meffe et al. 1983, Meffe 1985, Brooks 1986, Marsh and Minckley 1990, Stefferud and Stefferud 1994, Voeltz and Bettaso 2003). The native fish fauna of the Gila River Basin and of the Colorado River Basin overall was naturally depauperate and contained few fish that were predatory on or competitive with Gila topminnow (Carlson and Muth 1989). With the introduction of many predatory and competitive nonindigenous fish, frogs, crayfish, and other species, Gila topminnow could no longer survive in many of their former habitats, or the small pieces of those habitats that had not been lost to human alteration. Both large (Bestgen and Propst 1989) and small (Meffe et al. 1983) nonindigenous fish cause problems for Gila topminnow, as can nonindigenous crayfish (Fernandez and Rosen 1996) and bullfrogs.

Historically, the Gila topminnow was abundant in the Gila River drainage and was one of the most common fishes of the Colorado River Basin, particularly in the Santa Cruz system (Hubbs and Miller 1941). This formerly widespread distribution has been reduced to only 14 recent naturally occurring populations. Presently, only 11 of the 14 recent natural Gila topminnow populations are considered extant (Voeltz and Bettaso 2003). Only three (Cienega Creek, Monkey Spring, and Cottonwood Spring) have no nonindigenous fish present and therefore can be considered secure from nonindigenous fish threats. There have been at least 175 wild sites stocked with Gila topminnow, however, topminnow persist at only 19 of these localities. Of the 19, one site is outside topminnow historical range, and three now contain nonindigenous fish (Voeltz and Bettaso 2003). Many of the remaining natural and reestablished populations have a surface area smaller than 1,000 ft<sup>2</sup>.

The Sonoran Topminnow Recovery Plan (USFWS 1984) established criteria for down- and de-listing. Criteria for down-listing were met for a short period. However, due to concerns regarding the status of several populations, down-listing was delayed. Subsequently, the number of reestablished populations dropped below that required for down-listing, where it has remained. A draft revised recovery plan for the Gila topminnow is available (Weedman 1999). The plan's short-term goal is to prevent extirpation of the species from its natural range in the U.S. and to reestablish it into suitable habitat within its historical range.

### **Desert pupfish**

In Arizona, the genus *Cyprinodon* historically consisted of two recognized subspecies, (*C. m. macularius*) and (*C. m. eremus*), and an undescribed species, the Monkey Spring pupfish. The desert pupfish subspecies are now recognized as separate species, the desert pupfish (*Cyprinodon macularius*) and the Quitobaquito pupfish (*C. eremus*) (Echelle et al. 2000). Also, Minckley et al. (2002) suggested that the Santa Cruz River drainage was historically occupied by the extinct Santa Cruz (=Monkey Spring) pupfish, recently described as *Cyprinodon arcuatus*. All three species (then considered a single species) were listed as an endangered species with critical habitat on April 30, 1986 (USFWS 1986). The historical distribution of desert pupfish in Arizona included the Gila, San Pedro, and Salt rivers, and likely the Hassayampa, Verde, and Agua Fria rivers, although collections are lacking for the latter three. The desert pupfish is also found in the lower Colorado River, Salton Sink Basin, and Laguna Salada Basin (Eigenmann and Eigenmann 1888, Gilbert and Scofield 1898, Thompson 1920, Coleman 1929, Miller 1943, Minckley 1973, 1980, Miller and Fuiman 1987). Historical collections occurred in Baja California and Sonora, Mexico, and in the United States in California and Arizona.

The natural history of the desert pupfish is very similar to that described for the Gila topminnow. They occupied similar habitats, although the pupfish was not nearly as widespread. The desert pupfish also went through cycles of expansion and contraction because of natural climatological variation (USFWS 1986, 1993; Weedman and Young 1997). Such a scenario would have led to panmixia among populations over a very large geographic area (USFWS 1993).

Twelve natural populations persist; eight of these are in Mexico. About 20 reestablished populations exist in the wild (USFWS 1993). One or more threats imperil most natural and reestablished populations. Since the 19th century, desert pupfish habitat has been steadily destroyed by stream-bank erosion, the construction of water impoundments that dewatered downstream habitat, excessive groundwater pumping, the application of pesticides to nearby agricultural areas, and the introduction of nonindigenous fish species. The nonindigenous bullfrog may also prove problematic in the management of desert pupfish. The bullfrog is an opportunistic omnivore with a diet that includes fish (Frost 1935, Cohen and Howard 1958, Clarkson and deVos 1986). There is also concern that introduced salt cedar next to pupfish habitat may cause a lack of water at critical times (Bolster 1990; R. Bransfield, USFWS, pers. comm., 1999). Evapotranspiration by luxuriant growths of this plant may especially impact smaller habitats where water supply is limited. The remaining populations continue to face these threats.

Naturally occurring populations of desert pupfish are now restricted in the United States to California, in two streams tributary to, and a few shoreline pools and irrigation drains of, the Salton Sea. The species is found in Mexico at scattered localities along the Colorado River Delta and in the Laguna Salada basin. No natural populations occur in Arizona. Additional life history information can be found in the recovery plan (USFWS 1993) and references cited there.

## **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.

The action area includes the pond. Certain actions such as groundwater pumping may affect the pond or its water supply well. It is unlikely that any other actions, including military testing and training, outside the pond's fence will impact the pond.

### **Status of the species within the action area**

Neither species occurs within the action area.

### **Effects of the Action**

After desert pupfish and Gila topminnow are established in the IRCC pond, the effects from operation and maintenance of the pond should be minimal. Effects to the species may occur in several ways:

- Direct mortality from pumping water;
- Indirect impacts resulting from a reduction in water volume either from pumping or pump or float valve failure;
- Water-quality changes occurring with changing water levels;
- Noise effects to fish from nearby military activities;
- Maintenance of the pond, including intake and outlet structures; and
- Closure of the IRCC pond.

While fish are likely to be lost during water pumping, it is not likely to have a large impact on the fish population because the pond is 6,000 ft<sup>2</sup>. Besides closing the pond, the other potential impacts are expected to have very small effects on either listed species.

The overall effect of the proposed action on the Gila topminnow and desert pupfish will be beneficial if the species is successfully reestablished. Negative effects from the proposed action are unlikely.

### **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 following section 7 of the Act. Because the pond is entirely surrounded by the YPG, it is highly unlikely that any cumulative impacts would affect the IRCC pond or the fish.

### **Conclusion**

After reviewing the current status of desert pupfish and Gila topminnow, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Gila topminnow or desert pupfish. Critical habitat has been designated for

desert pupfish only outside of the action area, thus, none would be affected. We base these conclusions on the following:

1. Neither species occurs in the action area.
2. Due to the large size of the pond, mortality of individual fish is not likely to significantly impact either species.
3. Changes in water volume or water chemistry are unlikely to significantly impact the pond or the Gila topminnow or desert pupfish, unless the pump fails during the summer for more than a few days.
4. Maintenance of the pond would not cause more than minor losses of individuals.
5. The loss of the site will not be significant to the species as long as the rangewide status of the species does not decline significantly.
6. Noise from military activities is not expected to cause take or other significant effects to either species.

#### **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 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 (50 FR 17.3) "Harass" is defined 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, and sheltering. (50 FR 17.3). "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 prohibited taking under the Act if such taking meets the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the YPG so that they become binding conditions of any grant or permit issued to any applicants, as appropriate, for the exemption in section 7(o)(2) to apply. The YPG has a continuing duty to regulate the activity covered by this incidental take statement. If the YPG (1) fails to assume and implement the terms and conditions or (2) fails to require any applicants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the YPG must report the progress of the action and its impact on the species to the FWS as specified in the incidental take statement [50 CFR §402.14(i)(3)].

We anticipate that the proposed action will result in incidental take of desert pupfish and Gila topminnow if they are established in the pond. Incidental take will be difficult to detect for the following reasons: dead fish are difficult to find, cause of death may be difficult to determine, and losses may be masked by seasonal fluctuations in numbers or other causes. However, take of desert pupfish and Gila topminnow may occur from water pumping, maintenance, pump and float valve failure, and closure of the IRCC pond. We anticipate that the following take could occur as a result of the proposed action:

1. Mortality or injury of up to 100 desert pupfish and 100 Gila topminnow annually from normal pond operation and water withdrawal;
2. Mortality and injury of up to 25 desert pupfish and 25 Gila topminnow annually from maintenance activities; and
3. Loss of the entire Gila topminnow and desert pupfish populations if the IRCC pond is closed.

### **Effect of Take**

In this biological opinion, we find the anticipated level of take is not likely to jeopardize the continued existence of the endangered desert pupfish or endangered Gila topminnow.

### **Reasonable and Prudent Measures and Terms and Conditions**

The following reasonable and prudent measure is necessary and appropriate to minimize take of the desert pupfish and Gila topminnow. To be exempt from the prohibitions of section 9 of the Act, the YPG must comply with the following terms and conditions, which implement the reasonable and prudent measure and outline required reporting and monitoring requirements. These terms and conditions are non-discretionary. The reasonable and prudent measure and terms and conditions are only in effect following reestablishment of desert pupfish and Gila topminnow into the project area.

1. The YPG shall minimize fish mortality:
  - 1.1. The YPG shall allow the Department or the FWS access upon reasonable notice to monitor the site.
  - 1.2. The YPG shall provide to us copies of any reports regarding implementation of the proposed action. Estimates of take must be reported annually.
  - 1.3. The YPG shall notify the Department and the FWS at least 30 days before the IRCC pond is to be closed to allow salvage of fish.

### **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 that the YPG work with us and the Department to reestablish the desert pupfish and Gila topminnow into suitable habitat (Recovery Plans Task 2 [USFWS 1993, Weedman 1998]).
- We recommend that the Department stock desert pupfish first, since they tend to have much smaller numbers when mixed with Gila topminnow.
- We recommend that the YPG install a screen on the hose and pipe that is used to remove water from the IRCC pond, to minimize the loss of Gila topminnow and desert pupfish.

### **REINITIATION NOTICE**

This concludes formal consultation and conference on the action outlined in the request. 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 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 the 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 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 reinitiation.

Thank you for your action on behalf of Arizona's native fishes and the conservation and recovery of the Gila topminnow and desert pupfish. We look forward to working with you on other recovery actions for species of concern. If you have questions regarding this biological opinion or the consultation process, please contact Doug Duncan (520) 670-6150 (x236), or Sherry Barrett (520) 670-6150 (x223) of our Tucson Ecological Services Suboffice.

Sincerely,

/s/ Steven L. Spangle  
Field Supervisor

cc: Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ

Branch Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ  
Regional Supervisor, Arizona Game and Fish Department, Yuma, AZ

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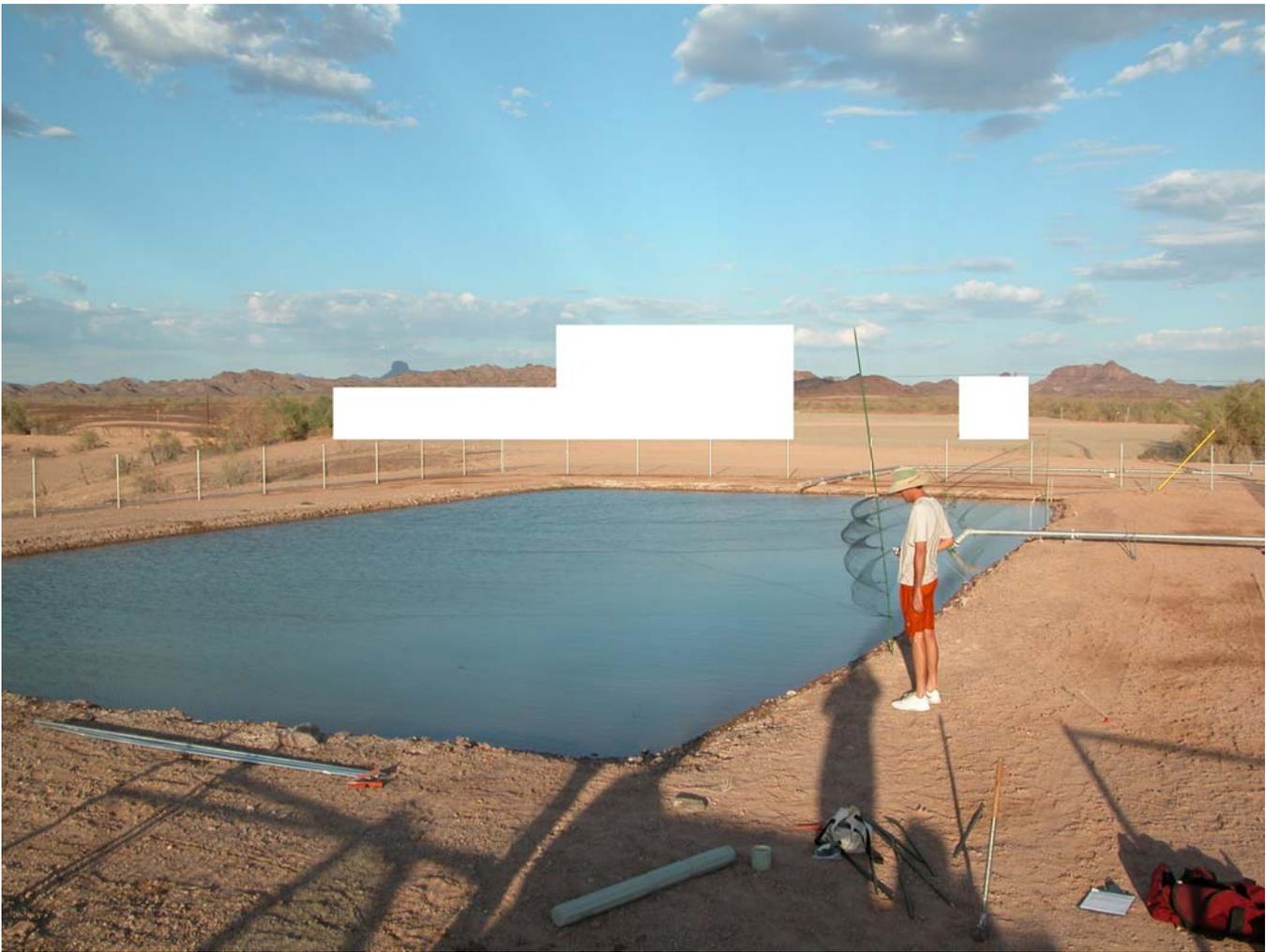


Figure 1. Inverted Range Control pond at Yuma Proving Ground, Arizona.