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In Reply Refer To:
AESO/SE
22410-2009-F-0106

May 13, 2009

To: Area Manager, Bureau of Reclamation, Glendale, AZ

From: Field Supervisor

Subject: Biological Opinion on the Proposed Translocation of Gila Topminnow and Desert Pupfish to Morgan City Wash and Chalky Spring

Thank you for your request for 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). Your request was dated December 5, 2008, and received by us on December 9. At issue are impacts that may result from the 2008 Central Arizona Project (CAP) funding for the proposed translocation of Gila topminnow and desert pupfish to Morgan City Wash and Chalky Spring located in Maricopa County, Arizona. For the purposes of this consultation, the U.S. Bureau of Reclamation (Reclamation) is the lead agency and the U.S. Bureau of Land Management (BLM) is a cooperating agency. The proposed action may affect the Gila topminnow (*Poeciliopsis occidentalis occidentalis*) and desert pupfish (*Cyprinodon macularius*).

This Biological Opinion is based on information provided in the biological assessment (U.S. Bureau of Reclamation 2008), field investigations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, translocation of fish and associated effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

Consultation History

April 15, 1994: We issued the final Biological Opinion for the CAP (2-21-90-F-119), analyzing the effects of the transportation and delivery of CAP water to the Gila River Basin and its potential to introduce and spread nonnative aquatic species. The Gila River Basin Native Fishes Conservation Program (Program) was established, in part, to mitigate the effects of the CAP on listed native fishes of the Gila River basin. Under the Program, Reclamation provides funding to the FWS to implement conservation and recovery projects. The FWS contracts with the Arizona Game and Fish Department (AGFD).

- December 18, 2005: We issued the final biological opinion (22410-05-F-0785) on the Agua Fria National Monument and Bradshaw-Harquahala Resource Management Plan.
- December 9, 2008: We received Reclamation's request to initiate formal consultation on the effects of the proposed translocation of Gila topminnow and desert pupfish to Morgan City Wash and Chalky Spring.
- January 12, 2009: We transmitted a memorandum indicating that all the information necessary to initiate consultation has been provided, and the biological opinion will be delivered on or before April 23, 2009.
- January 27, 2009: Interagency field visit conducted.
- March 26, 2009: Our staff discussed and agreed to describe the proposed action as the funding of the translocation of fish.
- April 13, 2009: Draft biological opinion transmitted to Reclamation.
- May 12, 2009: We received Reclamation's memorandum indicating you have reviewed the draft biological opinion, note no errors, require no additional information, and request that we finalize and transmit the final to you and your partners.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

In accordance with the 2008 CAP funding transfer agreement, Reclamation, through FWS, proposes to fund the AGFD to translocate desert pupfish and Gila topminnow to Morgan City Wash and Chalky Spring (see Figure 1 in BA). The lower reach of Morgan City Wash and the head of Chalky Spring are within Maricopa County's Lake Pleasant Regional Park on Reclamation lands, and the lower perennial portions of Chalky Spring are on BLM lands. For purposes of this consultation, the action area includes the perennial portions of Morgan City Wash and Chalky Spring that will be stocked with Gila topminnow and desert pupfish.

Morgan City Wash is approximately 22 kilometers (13.67 miles) in length, with approximately 1.5 kilometers (0.93 miles) of perennial flow upstream of the confluence with the Agua Fria River. Approximately 600 meters (1968.5 feet) upstream of the confluence is a small weir, approximately 1 meter (3.28 feet) in height, which formerly was used as a gauging station. Although fish can be introduced without modification, the weir planks may be replaced with steel or concrete in advance of the translocations to protect translocated populations into the future.

Chalky Spring is located in a tributary to Morgan City Wash approximately 4.3 kilometers (2.67 miles) upstream of the confluence of Morgan City Wash and the Agua Fria River. Water is present in the channel for approximately 100 meters (328 feet) below the spring, and the spring pool is approximately 2 meters (6.56 feet) wide and 3 meters (9.84 feet) long, and up to 0.5 meter (1.64 feet) deep.

Desert pupfish and Gila topminnow are proposed for translocation to Morgan City Wash in the perennial reaches above the weir, and to Chalky Spring. Choice of stock of Gila topminnow and desert pupfish will be based on recovery plans, existing genetic information, or the nearest geographic neighbor concept, and will be obtained from either wild or captive-reared stock.

The AGFD will conduct translocations under the authority of their existing Section 10(a)1(A) Endangered Species Permit with the FWS. Between 500 and 2000 individuals of each species will form the basis of the initial translocation attempt. Collected fish will be independently identified by three biologists to ensure that all non-target species are returned and only target species are moved. Fish will be transported to the stocking location in aerated, thermally-insulated containers and treated with a salt bath or Stress Coat®. If deemed necessary, fish will be treated with praziquantel to remove Asian tapeworm. Fish will be thermally tempered at the stocking location prior to release. Multiple supplemental stockings (augmentations) over several years (up to five) may be necessary to ensure fish to become established.

Monitoring surveys will be completed visually at reintroduction sites at one month from the date of reintroduction. Surveys will be completed again at six months and then annually using dip nets, seines, or minnow traps. After the first year, monitoring will be conducted on an annual basis.

STATUS OF THE SPECIES AND CRITICAL HABITAT

Gila topminnow

The Sonoran topminnow (*Poeciliopsis occidentalis*) was listed as endangered in 1967 under endangered species legislation enacted in 1966 (Public Law 89-669) (32 FR 4001). 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, is collectively known as the Sonoran topminnow. Both subspecies are protected under the Act. Minckley (1999) believes that the Yaqui topminnow and Gila topminnow are separate species being named *P. sonoriensis* and *P. occidentalis*, respectively.

Only Gila topminnow populations in the United States, and not in Mexico, are listed under the Act. 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 nonnative fishes (Miller 1961, Minckley 1985, Desert Fishes Team 2003). Other listed fish suffer from the same impacts (Moyle and Williams 1990). Life history information can be found in the 1984 recovery plan (USFWS 1984), the Draft Revised Gila topminnow Recovery Plan (Weedman 1998), and references cited in the plans.

Gila topminnow are highly vulnerable to adverse effects from nonnative aquatic species (Johnson and Hubbs 1989). Predation and competition from nonnative 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, Weedman and Young 1997). The native fish fauna of the Gila basin and of the Colorado basin overall, was naturally depauperate and contained few fish that were predatory on or competitive with Gila topminnow (Carlson and Muth 1989). Thus, Gila topminnow did not evolve mechanisms for protection against predation or competition and are predator- and competitor-naive. With the introduction of many predatory and competitive nonnative fish, frogs, crayfish (*Procambarus clarki*), 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) nonnative fish cause problems for Gila topminnow as can nonnative crayfish (Fernandez and Rosen 1996) and bullfrogs.

The status of the species is poor and declining. Gila topminnow has gone from being one of the most common fishes of the Gila basin to one that exists at not more than 30 localities (12 natural and 18 stocked). Many existing localities are small and highly threatened. Although many recovery actions have occurred for this species, Federal actions have contributed to the degraded environmental baseline of the Gila topminnow. Federal actions requiring section 7 consultations affecting the National Forests, Bureau of Land Management public lands, and others in the Gila River basin have contributed to the current status. A statewide Safe Harbor Agreement, finalized in 2007, is designed to increase conservation efforts on non-Federal lands.

Desert pupfish

The desert pupfish was listed as an endangered species with critical habitat in 1986 (51 FR 10842). Historical distribution of desert pupfish in Arizona included the Gila, San Pedro, Salt, and Santa Cruz rivers, and likely the Hassayampa, Verde, and Aqua Fria rivers, although collections are lacking for the latter three. The desert pupfish is also found in the Lower Colorado River, Rio Sonoyta basin, Salton Sink basin, and Laguna Salada basin (Eigenmann and Eigenmann 1888, Garman 1895, Gilbert and Scofield 1898, Evermann 1916, Miller 1943, Minckley 1980, Black 1980, Turner 1983, 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 of populations because of natural climatological variation (Weedman and Young 1997). Such a scenario would have led to panmixia among populations over a very large geographic area (USFWS 1993).

Thirteen natural populations persist; nine of these are in Mexico. Approximately 20 transplanted populations exist in the wild (USFWS 1993). One or more threats imperil most natural and transplanted populations. Since the 19th century, desert pupfish habitat has been 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 nonnative fish species. Nonnative bullfrogs may also prove problematic in the management of desert pupfish.

Naturally occurring populations of desert pupfish are now restricted in California to 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 Rio Sonoyta, on the Colorado River Delta, and in the Laguna Salada basin. Additional life history information can be found in the recovery plan (USFWS 1993) and other references cited there. Several recovery actions are underway. Species conservation is also expected to benefit from the statewide Safe Harbor Agreement for non-Federal landowners.

ENVIRONMENTAL BASELINE [in the action area]

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.

Description of the Action Area and the status of the species and critical habitat within the action area

The action area includes the perennial portions of Morgan City Wash and Chalky Spring that will be stocked with Gila topminnow and desert pupfish.

Neither the Gila topminnow or desert pupfish, or their critical habitat, currently occur in, or near, the action area. The likelihood of either species naturally dispersing to the action area during the expected life of the project is low to non-existent. Stocking efforts are expected to establish both species in the action area.

Factors affecting species environment and critical habitat within the action area

Waddell Dam was constructed in 1927 and New Waddell Dam was constructed in 1992 (22410-F-1983-0010). The original dam was located 0.8 kilometer (0.5 mile) upstream from New Waddell Dam, and stored 157,600 acre-feet (194,396,740.4 cubic meters) of water for agricultural use by the Maricopa County Municipal Water Conservation District. New Waddell Dam impounds approximately 902,000 acre-feet (1,112,600,633.5 cubic meters) at reservoir elevation of 1,706.5 feet (520.1 meters), for irrigation, municipal, and industrial use in central Arizona and western New Mexico.

A service spillway for New Waddell Dam is located approximately 7,500 feet (2,286 meters) west of the dam (see Figure 1 in BA). It consists of an unlined approach channel, an uncontrolled (ungated) reinforced concrete structure 590 feet (179.83 meters) in width, a reinforced concrete chute structure, also 590 feet (179.83 meters) wide, and an unlined downstream discharge channel (that discharges into Morgan City Wash). The maximum discharge capacity is 187,000 cubic feet (5,295.3 cubic meters) per second at maximum storage.

There is also an unlined fuseplug-controlled auxiliary spillway, 370 feet (112.78 meters) in width, located approximately 700 feet (213.36 meters) west of the service spillway (see Figure 1 in the BA). The fuseplug dike is designed to erode away if the reservoir elevation exceeds 1,711 feet (521.51 meters). In this event, water would discharge to Morgan City Wash through an unlined discharge channel with a capacity of approximately 129,000 cubic feet (3,652.9 cubic meters) per second at reservoir elevation of 1,725 feet (525.78 meters).

The weir on Morgan City Wash appears to act as a barrier to non-native fishes, making the action area suitable for pupfish and topminnow translocations. Green sunfish (*Lepomis cyanellus*), black bullhead (*Ameiurus melas*), bullfrog (*Lithobates catesbeiana*), and longfin dace (*Agosia chrysogaster*) have been recorded below the weir, but only longfin dace has been found upstream.

BLM will continue to manage lands within the watershed as described in the Bradshaw-Harquahala Resource Management Plan (22410-05-F-0785). Lake Pleasant Regional Park supports the translocations, which are identified their April 2003 Riparian Habitat Restoration Plan for portions of Lake Pleasant Regional Park. The Park has no planned actions involving Morgan City Wash or Chalky Spring. BLM lands within the Morgan City Wash watershed are subject to livestock grazing, wild burro management, mining, and recreation as described in the Bradshaw-Harquahala Resource Management Plan. Perennial reaches of Chalky Spring and Morgan City Wash are fenced to minimize livestock and off-highway vehicle access, though both areas are used by wild burros.

EFFECTS OF THE 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.

We anticipate that the overall effect of the proposed action, if successful, would be beneficial to the survival and recovery of Gila topminnow and desert pupfish. Establishment of new populations for each species will provide an added measure of security of the various genetic lineages, as identified in recovery plans and other documents guiding their recovery. We anticipate no effects to critical habitat, as none is designated in the action area.

Any mortality or injury that occurs through capture, handling, and transport stress will be covered by the AGFD's Section 10(a)1(A) Permit, and is not addressed in this consultation.

If Gila topminnow and desert pupfish establish in the action area, the possibility exists that individual fish could disperse downstream of the weir where they would likely be consumed by non-native fish. However, while it is possible that individuals could be washed to downstream areas during flood events, we believe that existing literature indicates this will be rare. For example, Minckley and Meffe (1987) determined that, while non-natives are unable to resist flooding events and are washed downstream, native desert fishes show little if any response to

flooding events. When individual fish are washed downstream and consumed by non-natives, we believe this would have a negligible effect on viability and would be nearly impossible to detect or measure.

The established fish populations may be affected by ongoing mining, grazing, and recreation in the Morgan City Wash watershed if surface soils are destabilized and contribute silt and other fine materials to surface runoff that could be carried downstream to translocation sites following significant storm events. However, the potential contribution of silt associated with these activities is difficult to measure given the large watershed size and the nature of ephemeral desert washes. Storm events large enough to result in surface flows in Morgan City Wash are infrequent and naturally result in surface erosion in the watershed. Nevertheless, the species are expected to persist, and will be verified during CAP-funded monitoring.

While livestock grazing does occur in the watershed, the translocation sites are protected from livestock use by protective fencing. This fencing is not effective at limiting wild burro access. Wild burros may access and drink water from the translocation sites, but they generally do not loaf or loiter in the areas. The frequency with which burros would use these areas is likely low given the close proximity and abundant access to water at Lake Pleasant. Wild burros are not likely to cause habitat degradation within stocked sites. The possibility that burros may step on or ingest a topminnow or pupfish is extremely remote.

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 long-term maintenance of fish populations in Morgan City Wash and Chalky Spring may be compromised by flood events or drought conditions. There is also a low probability that a catastrophic flood event could negatively affect translocated fish. As described above, when the reservoir reaches 1,706.5 feet (520.1 meters), water will begin to flow over the service spillway into Morgan City Wash. At elevation 1,711 feet (521.51 meters), discharge over the service spillway will reach 187,000 cubic feet (5,295.3 cubic meters) per second, and the pilot channel for the fuseplug in the auxiliary spillway will begin to be overtopped. At that point, the fuseplug will erode and discharge through the auxiliary spillway at 129,000 cubic feet (3,652.9 cubic meters) per second.

The service spillway was designed for a 1% probability of usage in any year (i.e., during a 100-year flood event), and that passage of a 200-year flood event would require releases not greater than 25,000 cubic feet (707.9 cubic meters) per second. The peak spillway discharge (utilizing both the service and auxiliary spillways) during the probable maximum flood of 493,400 cubic feet (13,971.5 cubic meters) per second would be approximately 316,000 cubic feet (8,948.1 cubic meters) per second, or about two-thirds of the peak inflow (U.S. Bureau of Reclamation 2008). If peak flood conditions did occur, lower Morgan City Wash would experience a catastrophic flood that we expect would wash fish downstream, resulting in the loss of the population.

Additionally, it is possible that drought and sustained low reservoir elevations could affect translocated fish at Chalky Spring. The relationship between Lake Pleasant surface elevation and spring flows has not been specifically determined, but O'Neil (1987) believed there was a correlation. Since 1999, reservoir elevations have fluctuated a maximum of 98 feet (29.87 meters) in any single year, reaching a maximum of 1,702 feet (518.77 meters) and a minimum of 1,598 feet (487.07 meters) across years. The mean difference in elevation across years was 62 feet (18.89 meters). Future predicted elevation fluctuation is 40 feet (12.19 meters), with the predicted minimum elevation at 1,645 feet (501.39 meters) (Reclamation 2008). Typical reservoir operations should not result in low reservoir elevations that would affect spring flow at Chalky Spring. However, an unplanned disruption in Colorado River water supply shortage or a CAP aqueduct failure, could result in low water levels that could cause drying in Chalky Spring and loss of habitat for translocated fish.

The potential loss of translocated fish populations from a catastrophic flood in Morgan City Wash or spring drying in Chalky Spring should not substantially affect the conservation status of either species. Both events are likely extremely remote and may not be realized during the life of the project.

CONCLUSION

After reviewing the current status of Gila topminnow and desert pupfish, the environmental baseline for the action area, the effects of the proposed funding of translocation, and the cumulative effects, it is the FWS's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Gila topminnow and desert pupfish. Critical habitat for the desert pupfish has been designated outside of the action area; therefore, no destruction or adverse modification of critical habitat is anticipated.

We present this conclusion for both fish species for the following reasons:

- Funding the translocation of Gila topminnow and desert pupfish would contribute to recovery and conservation of each species.
- Effects from wild burros and other ongoing actions are not expected to be severe.
- The potential loss of translocated fish populations from a catastrophic flood or drought should not substantially affect the conservation status of either species.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations 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 further 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.

AMOUNT OR EXTENT OF TAKE

The FWS does not anticipate the proposed action will incidentally take any Gila topminnow or desert pupfish for the following reasons:

- Fish lost during collection, transport, and stocking would be covered by AGFD’s section 10(A)1(a) permit.
- Fish mortality resulting from a catastrophic flood or drought would be outside the discretion of Reclamation.

EFFECT OF THE TAKE

We did not anticipate any incidental take.

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:

1. Reclamation and BLM continue to participate in recovery efforts for Gila topminnow and desert pupfish.

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

REINITIATION NOTICE

This concludes formal consultation on the action outlined in Reclamation's consultation 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 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.

The FWS appreciates Reclamation's and BLM's efforts to identify and minimize effects to listed species from this project. For further information please contact Mike Martinez (x224) or Debra Bills (x239). Please refer to consultation number, 22410-F-2009-0106 in future correspondence concerning this project.

Sincerely,

/s/Debra Bills for

Steven L. Spangle
Field Supervisor

cc (hard copy):

Area Manager, Bureau of Land Management, Phoenix, AZ (Tim Hughes)
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ

cc (electronic copy):

Wildlife Biologist, Fish and Wildlife Service, Tucson, AZ (Doug Duncan)

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