



United States Department of the Interior

Fish and Wildlife Service Arizona Ecological Services Office

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In reply refer to:

AESO/SE
02EAAZ00-2015-F-0735

December 15, 2017

Ms. Karla S. Petty, Division Administrator
U.S. Department of Transportation
Federal Highway Administration
4000 North Central Avenue, Suite 1500
Phoenix, Arizona 85012-3500

Re. Santa Cruz River/Ina Road Bridge Project Reinitiation
FHWA File # STP-MRN-0(014)T
NH-STP-010-D(216)S
ADOT File # 0000 PM MRN SB413 01C
0000 PM MRN H8479 01C

Dear Ms. Petty:

This letter documents our review of your supplemental concurrence request, received in our office by electronic mail (email) on December 11, 2017, in compliance with section 7 of the Endangered Species Act of 1973 (Act) as amended (16 U.S.C. 1531 *et seq.*). At issue are potential effects of an ongoing bridge replacement project at the Ina Road bridge over the Santa Cruz River in the town of Marana, Pima County, Arizona. In a concurrence, dated December 18, 2015, we concluded that the proposed action was not likely to adversely affect the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) (flycatcher) or threatened yellow-billed cuckoo (*Coccyzus americanus*) (cuckoo). This reinitiation has been triggered by the discovery of the endangered Gila topminnow (*Poeciliopsis occidentalis occidentalis*) (topminnow) in the Santa Cruz River four miles (mi) upstream (south) of the bridge construction site in northwest Tucson. The topminnow had been absent from this stretch of the river for over 70 years and was not considered in our December 18, 2015 concurrence. With the submittal of your letter, the Federal Highway Administration (FHWA) has reinitiated consultation per 50 CFR § 402.16 for the referenced bridge replacement project.

Your correspondence of December 11, 2017, included a project description as it appeared in the October 29, 2015 Biological Evaluation (BE) for this project along with information regarding the current status of the construction project and potential impacts to the topminnow. You determined that the Ina Road bridge project “may affect, but is not likely to adversely affect” the topminnow.

The U.S. Fish and Wildlife Service (FWS) and Arizona Department of Transportation (ADOT) discussed the implications of the topminnow discovery near the bridge construction site during a

conference call on December 11, 2017. As a result of that discussion, ADOT has changed its determination for effects to the topminnow to “may affect, and is likely to adversely affect,” which requires formal consultation. ADOT also committed to implement conservation measures on behalf of the topminnow, as described below. Accordingly, we now provide our biological opinion (BO) for the project, triggered by the appearance of topminnows in the Santa Cruz/Tucson basin and by modification of the proposed action as originally described in the BE. Our conclusions concerning the flycatcher and cuckoo in our concurrence of December 18, 2017, have not changed and no further consultation is required for those species.

CONSULTATION HISTORY

- December 18, 2015 We sent a concurrence letter for this project regarding effects to the flycatcher and cuckoo.
- November 9, 2017 Gila topminnows were found four miles upstream of the bridge construction site.
- December 11, 2017 We received your supplemental concurrence request with your determination that the project “may effect, but is not likely to adversely affect” the topminnow. We conducted a conference call during which you agreed to change your determination for effects to the topminnow to “may affect, and is likely to adversely affect,” which requires formal consultation. ADOT committed to conservation measures on behalf of the topminnow, as described below.
- December 15, 2017 We sent you our biological opinion for the project.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The following summary of the proposed action is taken from the BE. Maps, photographs, and diagrams of the action and action area are included in the BE and are incorporated herein by reference. Throughout the BE, the term “project limits” is used to represent the construction footprint (area of disturbance), while the term “project vicinity” is used to denote a more expansive landscape context. In this BO, we do not use the term “project vicinity.” Instead we use the term “action area” in a similar context, as defined below.

The FHWA and ADOT are replacing the existing Ina Road-Santa Cruz River bridge and improving roadways approaching the bridge. Bridge construction has been underway since June 2016 and is expected to take another year to complete. The project scope, as described in the BE, includes the following actions that are relevant to this consultation:

- Construction of a new eastbound nine-span girder two-lane bridge upstream (south) of the existing Ina Road–Santa Cruz River bridge. The eastbound bridge has been

- completed (see below) and is 630 feet long with 16 piers (eight sets of two). There are nine spans (the distance between piers). The width of the bridge is 43 feet;
- Demolition of the existing bridge;
 - Construction of a new westbound nine-span girder two-lane bridge nearly identical to the eastbound bridge;
 - Construction of approximately 400 feet of bank protection at bridge abutments on both sides of the river.

Current Status of the Project

The new eastbound bridge has been built. Currently, contractors are shifting traffic from the old bridge to the new eastbound bridge. Demolition of the old bridge will begin on December 18, 2017, will take two to three weeks to complete, and will be followed by construction of the new westbound bridge.

To date, water diversions have occurred on two separate occasions to provide dry work areas during construction of the eastbound bridge and to install bank protection structures. Bridge demolition will not require new water diversions; however, up to three more diversions are planned in order to complete bank protection and to construct the westbound bridge. When water is diverted by the contractor, it will flow along the east or west bank of the riverbed so that work can occur on the opposite side. Diversions will start at the outlet of the Ina Road waste water treatment plant, about 0.1 mi upstream of the bridges. Diverted water will flow under the Ina Road bridges, over an existing grade control structure just north of Ina Road, then back to the natural low-flow channel.

To divert the river, the contractor will build earthen berms and excavate a channel for the diverted water. Once berms and the new channel are constructed, an excavator will open the new channel to divert water that is currently flowing through the last channel created during construction. The existing channel will then be blocked and left to dry out.

Conservation Measures

ADOT has committed to implement the following conservation measures to reduce effects of the action on the topminnow:

- Fish monitoring will occur during each of the upcoming three water diversions;
- Monitoring will occur the day before each diversion, the day that each diversion occurs, and the day after each diversion has occurred;
- Two biologists, one holding a section 10 recovery permit for the Gila topminnow, will monitor areas that have been dewatered during each diversion;
- Biological monitors will seine/dipnet pools resulting from dewatering and move fish from dewatered channels to the active channel downstream and outside the project footprint;
- Biological monitors will relocate all fish captured during monitoring (native and nonnative species) and to the extent possible will identify to species all fish that are captured and relocated.

Description of the Action Area

The FWS defines the action area as all areas to be affected directly or indirectly by the proposed action, and not merely the immediate area involved in the action (50 CFR § 402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment, focusing on, but not exclusive to, the Ina Road crossing of the Santa Cruz River and the project limits.

The Santa Cruz River flows south into Mexico from the high intermontane grasslands of the San Rafael Valley, near Patagonia, Arizona, then north into the U.S. to its confluence with the Gila River near Phoenix. Without significant rainfall, much of this river is dry. Exceptions include reaches of the river downstream of waste water treatment plants, where perennial flows usually occur.

Adjacent to and within the project limits, river flows are dependent on effluent water discharges at the Roger Road and Ina Road wastewater treatment plants. The Roger Road discharges occur about four mi south of Ina Road. From there, flows may or may not connect with flows at the Ina Road discharge site. Continuous flows between the Roger Road plant and the Ina Road plant depend on effluent release rates and rainfall in the Santa Cruz Basin. On November 22, 2017, flows were continuous between the Roger Road and Ina road discharge site where a large pool and back water flow has been created, presumably as a result of earlier construction related water diversions (personal communication from J. White, ADOT Biologist).

STATUS OF THE SPECIES

The Gila topminnow (*Poeciliopsis occidentalis occidentalis*), a small fish in the minnow family (Poeciliidae), is one of two subspecies of Sonoran topminnow (*P. occidentalis*) that occurs in Arizona. This topminnow was listed as endangered in 1967 without critical habitat (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. Both subspecies are listed as endangered under the Act. The Gila topminnow is thought to have been the most common fish in the Gila River Basin in Arizona, and its range also extended into Mexico and New Mexico (Minckley 1973). Historically, the subspecies was found in Yavapai, Gila, Pinal, Maricopa, Graham, Greenlee, Cochise, Pima, Santa Cruz and Yuma Counties, Arizona (Arizona Game and Fish Department [AGFD] 2001).

Gila topminnows prefer quiet, warm waters with a slow current, such as shallow margins of main river channels, backwaters, springs, wells, or tributaries that are close to or adjoining larger rivers (Weedman and Young 1997). The subspecies historically concentrated in shallows, especially where vegetation or debris was present, with adults tending to congregate in areas of moderate current, below riffles and along the margins of flowing streams in accumulated algae mats (Minckley 1973). Gila topminnows can withstand a fairly wide range of water temperatures and chemistries (AGFD 2001).

Gila topminnows are relatively short-lived, with a life span of approximately one year. Females bear live young, typically from 10–15 per brood, and may carry two broods simultaneously. The

reproductive season normally lasts from April through November, although young may be produced year-round in some thermally stable springs. Young produced early in the breeding season may reach sexual maturity in a few weeks to several months. This omnivorous fish has a wide-ranging diet consisting of bottom debris, vegetative debris, and small crustaceans. The subspecies also feeds on aquatic insect larvae (AGFD 2001).

The reasons for decline of this fish include past dewatering of rivers, springs and marshlands; impoundment, channelization, diversion, and regulation of stream flows; land management practices that promote erosion and arroyo formation; and the introduction of predacious and competing nonnative fishes (Miller 1961, Minckley 1985).

Gila topminnows are highly vulnerable to adverse effects of 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 remaining populations (Meffe 1985, Meffe et al. 1983, Brooks 1986, Marsh and Minckley 1990, Stefferud and Stefferud 1994, Weedman and Young 1997, Minckley and Marsh 2009). The Gila River Basin and Colorado River Basin contained few native fish species that were predatory on or competitive with Gila topminnows (Carlson and Muth 1989). In the riverine backwater and side-channel habitats that formed the bulk of Gila topminnow natural habitat, predation and competition from other fishes were essentially absent. Thus, topminnows did not evolve mechanisms for protection against predation or competition and are predator- and competitor-naive. Due to the introduction of many predatory and competitive nonnative fish, frogs, crayfish, and other species, Gila topminnows could no longer survive in many of their former habitats.

Reductions in the distribution and abundance of the topminnow are attributed in large part to predation by one species of nonnative fish: the mosquitofish (Miller 1961, Schoenherr 1974, Minckley et al. 1977, Meffe et al. 1982, Meffe et al. 1983, Meffe 1984, 1985, Minckley et al. 1991, Voeltz and Bettaso 2003, Duncan 2013). The mosquitofish was introduced in the early 1900s. This species uses the same habitat as the Gila topminnow and is aggressive and predatory, preying on young topminnows and harassing adults, which can damage their fins, leading to stress, bacterial infection, and eventually death. Minckley (1973) noted that displacement or destruction of Gila topminnows by mosquitofish can occur in a single season.

The outlook for the Gila topminnow is mixed. A recovery program actively stocks Gila topminnow in Arizona and New Mexico to reestablish topminnows in “new” sites (Robinson 2010, 2011, 2012). However, natural sites continue to slowly decline. Today, the subspecies exists at about 35 localities (9 natural and 26 stocked). Populations in many of these localities are small and highly threatened.

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 that 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.

Status of the Topminnow in the Action Area

In recent years, two topminnow populations have been found in the Santa Cruz River. Both populations are associated with effluent releases from waste water treatment plants. In 2015, topminnows were found in a reach of the Santa Cruz River in Nogales, Arizona, more than 50 mi upstream (south) of the Ina Road bridge construction site. This population was found after upgrades to an international waste water treatment plant near the Mexican border.

The Tucson population was found on November 9, 2017, during surveys conducted annually (in November) in both the Nogales and Tucson reaches. The last known collection of the topminnow in Tucson was in 1943 (personal communication from Doug Duncan, FWS Species Lead for the topminnow, November 27, 2017). The recent topminnow discovery occurred just downstream of the Roger Road waste water treatment plant about four mi south of the project limits.

Surveys in Nogales and Tucson are coordinated by the Sonoran Institute in partnership with Pima County, FWS, Arizona Game and Fish Department (AGFD), and other agencies and private organizations. In the Tucson reach, surveys are done in four locations and have been occurring since 2013. Two of the sites are upstream of the bridges and two are downstream.

Because topminnows were found during the scheduled survey, on November 9, 2017, surveys of all four sites were repeated on November 21, 2017, with the same result. Topminnows were again captured only at the upstream-most site. The surveys established the presence of topminnows at that site, but provided no population estimate.

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, which 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.

Effects to the topminnow will depend on their presence within the project limits when the river is channelized up to three times over the next year. At present, topminnows are known to occur four mi upstream of the bridge construction site, and as of late November 2017, continuous flows were present from the Roger Road water treatment plant to the Ina Road plant. Diversions of the river will begin at the Ina Road plant, which means that topminnows that have dispersed from Roger Road to Ina Road since they were discovered will be affected by the next water diversion. Topminnows that disperse downstream before or during subsequent diversions will also be affected.

Each time the river is diverted (re-channeled), fish will be captured and relocated as the old channel dries. However, fish removal would not be expected to be 100 percent successful. Thus, some topminnows could be killed as the old channel dries, and there is the potential for

topminnows to be stressed, to be injured, or to die while they are being temporarily held and released. Due to the stress of handling, some fish may also die after release.

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 main actions likely to occur in the action area are land clearing for development of additional infrastructure, housing, and industry in the vicinity of the project area. These activities may increase the amount of sediment introduced into the Santa Cruz River, potentially reducing habitat quality for Gila topminnow.

CONCLUSIONS

The conclusions of our biological opinion are based on full implementation of the project as described in the *Description of the Proposed Action* section of this document, the project's current status, and the conservation measures on behalf of the topminnow that have now been incorporated into the project design. It is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the topminnow. We base this conclusion on the following reasons:

- The project will have no effects to the topminnow where they have been found four miles upstream of the project limits. Effects will occur only to topminnows that disperse downstream into the project limits during construction. Although fatality or injury of topminnows that disperse downstream during the project is likely to occur, capture and relocation protocols (conservation measures) as described above will minimize the risk of harming individual topminnows that may be present within the project limits during construction, and will not impede the ability of topminnow to reoccupy the project area post-construction.
- Effects to topminnows will be temporary and will cease with completion of the project.

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 defined (50 FR 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 FR 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

We anticipate that the proposed action is reasonably certain to result in incidental take of Gila topminnows. Capture and relocation of these fish will harass all individuals involved and may result in harm (injury or fatality) of some of those fish, either during capture or while they are held before release. There should be no limit on the number of topminnows that are taken to safety; thus, we anticipate incidental take of an unlimited number of topminnows in the form of short-term harassment as they are captured and moved out of the project footprint. We anticipate take in the form of injury or death of no more than ten percent of the number of topminnows that are caught and held temporarily. We also anticipate take of a small number of fish that die after release due to the stress from handling or predation of weakened individuals. Fish that die after release are unlikely to be detected, and therefore we cannot quantify that amount of take.

Finally, we anticipate take in the form of injury or death of all topminnows that are not captured (i.e., are missed) during capture efforts after re-channeling of the river on three occasions. The level of incidental take in this case is expected to be low given that conservation measures described above are followed explicitly by the biological monitors who implement those measures. The substantial efforts that ADOT has committed to by ensuring that qualified fish biologists will monitor dewatering of the river channel should reduce take to its lowest possible level. We will consider take to be exceeded if fish capture and relocation measures are not followed and as a result additional unanticipated injuries or fatalities occur.

Effect of the Take

In this biological opinion, the FWS determines that the above level of take is not likely to result in jeopardy to the Gila topminnow. Although the proposed action may adversely affect the Gila topminnow in the short-term through harassment and the loss of some individual fish that die during handling and release, or that cannot be captured and relocated, the proposed action will not result in the permanent loss of Gila topminnow in the action area.

Reasonable and Prudent Measures and Terms and Conditions

The conservation measures included in the proposed action are appropriate to minimize take of the topminnow. However, we are including monitoring and reporting requirements as a reasonable and prudent measure to document any take that occurs. In order to be exempt from the prohibitions of section 9 of the Act, the FHWA/ADOT must comply with the following terms and conditions which implement reasonable and prudent measure and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

1. FHWA and ADOT shall monitor incidental take resulting from the proposed action and report to the FWS the findings of that monitoring.

- 1.1 FHWA and ADOT will designate a responsible party to monitor areas that could be affected by the proposed action to ascertain take of individuals of the topminnow. Monitoring will be accomplished by the fisheries biologists designated to implement conservation measures as described above.
- 1.2 All native and nonnative fish species captured before, during, and after dewatering of the work area will be placed downstream of the work area as provided for in the conservation measures. The number of each species captured and moved will be recorded.
- 1.3 Any topminnow found injured or dead during the project will be salvaged and the body placed on ice if available then frozen as soon as possible to preserve the tissues for later research. If any fish is injured or killed, the Arizona Ecological Services Office will be notified immediately for instructions on transport, storage and disposal of specimens.
- 1.4 FHWA/ADOT shall submit a monitoring report to the Arizona Ecological Services Field Office within 90 days of completion of the work within the Santa Cruz River. This report will briefly document implementation of conservation measures, the number of native and nonnative fish encountered, and topminnow injuries and fatalities.

Disposition of Dead or Injured Listed Species

Upon locating a dead or injured listed species, initial notification must be made to the U.S. Fish and Wildlife Service, Office of Law Enforcement, (Resident Agent in Charge), 4901 Paseo del Norte NE, Suite D, Albuquerque, New Mexico, 87113, telephone: 505/248-7889, within three working days of its finding. Written notification (by email or regular mail) must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Office of Law Enforcement, with a copy to this office. Care must be taken in handling sick or injured animals, to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

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 have not identified any additional conservation recommendations for the proposed action.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in your consultation request. As provided in 50 FR 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. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The FWS appreciates efforts by the FHWA and ADOT to identify and minimize effects to listed species from this project. We encourage you to coordinate the review of this project with AGFD. We also appreciate your ongoing coordination during implementation of this program. In keeping with our trust responsibilities to American Indian Tribes, we are providing copies of this biological and conference opinion to the Bureau of Indian Affairs and are notifying affected Tribes.

For further information please contact Robert Lehman (602) 889-5950 or Brenda Smith at (928) 556-2157. In all future correspondence on this project, please refer to consultation number 02EAAZ00-2015-F-0735.

Sincerely,

Steven L. Spangle
Field Supervisor

cc: (electronic)

Wildlife Biologist, Fish and Wildlife Service, Tucson, AZ (Attn: Doug Duncan)
Supervisor, Region 5, Arizona Game and Fish Department, Tucson, AZ
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Arizona Department of Transportation, Phoenix, AZ (Attn: Justin White, Kris Gade, Josh Fife, Audrey Navarro)
Environmental Coordinator, Federal Highway Administration, Phoenix, AZ (Attn: Tremaine Wilson)
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Chairman, Pascua Yaqui Tribe, Tucson, AZ
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