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AESO/SE
02-21-05-F-0727
02-21-96-F-0086
02-21-88-F-0114

May 11, 2006

Memorandum

To: Field Manager, Bureau of Land Management, Safford, Arizona

From: Field Supervisor

Subject: Formal Consultation on the Proposed Tamarisk Control and Selective Mesquite Removal Project within the Gila Box Riparian National Conservation Area in Greenlee and Graham Counties, Arizona

This transmits our response to your August 18, 2005, and February 8, 2006, requests for interagency consultation on the proposed removal of tamarisk (*Tamarix* spp.) and selective removal of Mesquite (*Prosopis* spp.) from portions of the Gila River and Bonita Creek within the Gila Box Riparian National Conservation Area (RNCA) in Graham and Greenlee counties, Arizona. Your August 18, 2005, correspondence requested conference/consultation on the proposed threatened Gila chub (*Gila intermedia*) and concurrence that the proposed action may affect, but is not likely to adversely affect the endangered southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher) and the endangered razorback sucker (*Xyrauchen texanus*). In your February 8, 2006, letter you updated your request to include a request for formal consultation on the now-listed Gila chub and on razorback sucker. This response is provided in accordance with the requirements of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

We concur that the proposed action is not likely to adversely affect the flycatcher (see Appendix 1). This consultation addresses the effect of the proposed action to Gila chub and razorback sucker and serves as a reinitiation of formal consultation on the Biological and Conference Opinion on the Safford Resources Management Plan (File numbers 02-21-05-F-0086 and 02-21-88-F-0114) (Reinitiated Safford RMP Consultation). We have assigned file number 02-21-05-F-0727 to this consultation; please reference this number in any future correspondence. A complete administrative record is on file at the Arizona Ecological Service Office (AESO).

BIOLOGICAL OPINION

Consultation History

Prior consultations:

April 5, 1990: We transmitted our Biological Opinion, Draft Safford Resource Management Plan and Environmental Impact Statement (File number 02-21-88-F-0114) to you.

June 10, 2004: We transmitted our Reinitiation of Consultation/Conference on the Gila Box Riparian National Conservation Area Interdisciplinary Activity Plan, Graham County, Arizona (File number 02-21-92-F-0070-R2 and 02-21-96-F-0160-R7) (Gila Box RNCA IAP consultation).

June 17, 2005: We transmitted our draft Reinitiated Biological and Conference Opinion on the effect of the Safford Resource Management Plan (File number 02-21-05-F-0086 and 02-21-88-F-0114) (Reinitiated Safford RMP consultation) to your agency. You have reviewed said document and it is at this writing being rendered in a final version for transmittal.

This consultation:

July 14, 2004: Dave Smith and Mark Crites of my staff corresponded via electronic mail with Heidi Kuska of your staff regarding the potential removal of tamarisk from the Gila Box RNCA and how that action related to the reinitiated consultation under the *Safford Resource Management Plan* (File numbers 02-21-05-F-0086 and 02-21-88-F-0114).

July 26, 2004: Ms. Kuska contacted Mr. Crites to discuss interagency coordination for the proposed action. The proposed action's Environmental Assessment (EA) was transmitted to Mr. Crites via electronic mail on July 28, 2004.

August 18, 2004: Our respective staffs met to discuss various Safford Field Office projects, including the proposed action. Specific issues discussed included the use and effects of herbicides, reestablishment of native plants following tamarisk removal, and habitat of and surveys for flycatchers.

September 8, 2004-December 2, 2004: Jason Douglas of my staff communicated with Ms. Kuska via electronic mail on various issues surrounding proposed flycatcher critical habitat, spikedace, loach minnow, Gila chub, and critical habitat for the razorback sucker within the project area.

March 29, 2005: Ms. Kuska transmitted an electronic version of the proposed action's draft BE to Mr. Douglas. FWS comments were provided to Ms. Kuska via telephone on May 12, 2005.

August 22, 2005: We received your August 19, 2005, request for consultation on the proposed action.

September 19, 2005: We transmitted a memorandum (File numbers 02-21-05-F-0727 and 02-21-96-F-0160) to you stating that you had provided sufficient information with which to initiate conference/consultation.

December 21, 2005: Mr. Douglas provided updated information regarding the reproposal of critical habitat for spikedace and loach minnow to Ms. Kuska and Heidi Blasius of your staff. Mr. Douglas also provided information concerning the need for formal consultation on the proposed action's effects to razorback sucker critical habitat.

January 24, 2006: Mr. Douglas and Ms. Kuska discussed revised project start dates (Fall 2005 vs. Spring 2006) via electronic mail.

February 10, 2006: We received the electronic version of your February 8, 2006, memorandum requesting formal consultation on the proposed action's effects on razorback sucker and its critical habitat.

March 14, 2006: We transmitted to you a draft biological opinion on the proposed action.

May 5, 2006: We received, via electronic mail, your comments on our draft biological opinion.

Description of the Proposed Action

Herbicide Treatment

The proposed action involves the removal of tamarisk from riparian zones along Bonita Creek and the Gila River within the Gila Box RNCA. The proposal also includes selective mesquite treatment of approximately ten cultural and nine recreation sites on the Gila River and Bonita Creek. The proposed action's duration is ten years; Bureau of Land Management (BLM) monitoring will be used to evaluate efficacy and the need for additional and/or altered treatments.

Treatment site sizes range from individual tamarisk trees interspersed within cottonwood (*Populus* spp.) and/or willow (*Salix* spp.) stands to 1-acre pure-tamarisk stands. Individual tamarisk trees to be treated typically range from six feet to eighteen feet high. There are clusters of larger trees measuring approximately 30 feet tall near the confluence of the San Francisco River. There are also clusters of tamarisk, approximately one-quarter to one-half acre, with individuals ranging from 15 to 20 feet high. Garlon 4 and Habitat herbicides (each with a nonionic spray adjuvant) will be used to treat tamarisk, and Remedy herbicide will be used to treat mesquite stumps.

Herbicides and adjuvant will be used only in accordance with product labeling and the respective Material Safety Data Sheet (MSDS). Herbicide application will be under the direct supervision of a BLM-certified herbicide applicator or a certified contractor. A Bureau of Land Management Pesticide Use Proposal (PUP) document will be approved for each herbicide before beginning application. In the event of an herbicide spill, BLM and/or the contractor will remove the contaminated soil and place the soil in plastic containers. The contaminated soil will be taken to

an appropriate hazardous materials facility for disposal. Spill site location, size of spill, and disposal site will be documented and monitored.

Access to tamarisk on Bonita Creek is by vehicle and hiking. Float boats will be used to access tamarisk along the Gila River. All herbicide solutions will be mixed and made ready for transport at the Safford Field Office. Herbicide will be poured into leak proof, high-impact plastic backpack sprayers or hand held spray bottles then placed into sealable dry boxes ready for transportation by vehicle or float boat. No more than five gallons of herbicide will be carried at any one time. Herbicide transported down the Gila River via float boat will be double-packaged as described above while on the river.

Tamarisk located in the water or within ten feet of the water's edge will be treated with Habitat containing Induce, a nonionic spray adjuvant. Both Habitat herbicide, the active ingredient of which is Isopropylamine salt of Imazapyr, and Induce are approved for aquatic use. Tamarisk beyond the 10-foot buffer will be treated with Garlon 4, the active ingredient of which is triclopyr, with the nonionic spray adjuvant Induce. Herbicide treatment will not occur on private land, including the City of Safford property which contains a drinking water infiltration system. In addition, herbicide will not be used within a 0.5-mile buffer of the City of Safford's Bonita Creek infiltration system.

Treatment for the cultural and recreation sites would include approximately 2 acres for each site, all located within the RNCA. Mesquite treatment at these sites would be well away from the water's edge, normally beyond 50 feet, but as a rule at least 10 feet. Cultural and recreation sites needing mesquite stump treatment at this time are Old Lady Gay Historic Cabin and Serna Cabin Picnic Area on Bonita Creek, and Dry Canyon Float Boat Take-out and Spring Canyon Picnic Area on the Gila River. Future treatment at the remaining cultural and recreation sites would only occur should the need arise for fire prevention or structural stabilization measures.

Herbicide treatment will occur during spring (March 1 to March 31) and autumn/winter (October 1 to January 1) time frames. Herbicide treatment will be scheduled for weekdays to avoid busy visitor-use periods. Tamarisk treatments for the Gila River and Bonita Creek are scheduled to begin in the autumn of 2006. Treatment will begin on upper Bonita Creek at the Gila Box RNCA boundary. Old Lady Gay Historic Cabin and potentially, other cultural and recreation site mesquite treatments, using the herbicide Remedy (active ingredient triclopyr) and Induce, are also scheduled for the autumn of 2006. Tamarisk treatment for the Gila River will start near the confluence with the San Francisco River during the autumn of 2006^a. Criteria used to determine the priority for tamarisk site treatment selection include: (1) potential for successful natural and/or manipulated native habitat reclamation; (2) site location; (3) size of plants and plant grouping; and (4) plant age.

Herbicide treatment techniques include low volume basal bark, cut-stump, and low volume foliar, and are described below.

Low Volume Basal Bark Treatment (as per label and MSDS)

^a Should treatment commence later than stated, the 10-year project duration shall apply to the actual start date.

An herbicide backpack sprayer with a low-pressure nozzle will be used to apply Garlon 4 with a nonionic spray adjuvant to tamarisk smaller than approximately six inches in diameter on the plant stem from ground level to a height of 12 to 15 inches. The entire circumference of the stem will be covered with the herbicide. A mixture of 20-30 percent Garlon 4 and 70-80 percent nonionic spray adjuvant will be employed. Colored dye will be added to the herbicide mixture to temporarily identify treated plants.

Cut-stump Treatment (as per label and MSDS)

Pruning loppers, knives, and/or chainsaws will be used to cut tamarisk stems as close to the ground as possible for plants larger than approximately six inches in diameter. All tamarisk trimmings and plant cuttings will be deposited and left above the high water mark to dry and decay. Using a backpack sprayer and/or a hand held spray bottle, 100 percent Garlon 4 [1.5 pounds (lbs) per acre (ac)] will be applied to the wet cambium and adjacent wood around the entire circumference of the stump. Mesquite herbicide treatment at the Old Lady Gay Historic Cabin will also use cut-stump treatment. A mixture of 20-30 percent Remedy ($1.5 \text{ lbs}\cdot\text{ac}^{-1}$) and 70-80 percent nonionic spray adjuvant will be used for the mesquite. Colored dye will be added to the herbicide to temporarily identify treated plants.

Low Volume Foliar with Backpacks (as per label and MSDS)

A backpack sprayer will be used to apply Habitat with Induce and distilled water to tamarisk growing in the water or within ten feet of the water's edge. A low- pressure narrow nozzle with a high flow rate will be used to produce a large herbicide droplet. Tamarisk under four feet in height will be sprayed down on the crown so as to cover the crown and approximately 70 percent of the plant. Tamarisk four to eight feet in height will be spray-swiped on their sides by directing spray in smooth vertical motions to at least two sides of the plant. Crowns will be covered if possible. Tamarisk over eight feet in height will be laced on their sides by directing spray to at least two sides in smooth zigzag motions from crown to bottom. These applications will employ a mixture of one percent Habitat ($1.0 \text{ lbs}\cdot\text{ac}^{-1}$), 0.25 percent Induce, and 98.75 percent distilled water. Low-volume foliar application will not be used if winds are greater than ten miles per hour. Colored dye will be added to the herbicide mixture to temporarily identify treated plants.

Monitoring

The potential for natural re-vegetation of native plants for Bonita Creek is good. The Gila River may represent more of a challenge for natural re-vegetation. Annual monitoring, at a minimum, by the Gila Box RNCA staff will provide data for determining the success rate of naturally reoccurring native plants. Photo points will be established for clumps of tamarisk trees at the time of treatment. Annual monitoring and re-photographing of these sites will illustrate herbicide effectiveness, non-target plant mortality, and regeneration. Bureau RNCA staff will provide native plants and/or seeds to foster rehabilitation should monitoring indicate that native plants are not returning.

Gila Box RNCA staff and the Safford Field Office Nonnative/Invasive Plant Specialist will monitor the treatment sites annually and reapply herbicide to missed or new plants. Herbicide application for missed or new plants is expected to continue for at least five, but up to ten years following initial treatment.

Effects of the Proposed Action

Gila Chub

The Gila chub's Status of the Species and Environmental Baseline sections from the Gila Box RNCA IAP consultation and Reinitiated Safford RMP consultation remain up-to-date and are incorporated herein via reference. The Status of the Species narrative must now reflect, however, that the Gila chub was listed as endangered on November 2, 2005 (70 FR 66664; FWS 2005). Critical habitat was also designated in that Final Rule, although Bonita Creek was excluded from the designation.

The following analysis of effects incorporates the comprehensive analysis contained in your BE, and considers both the treatment of tamarisk along and adjacent to the Gila River and Bonita Creek as well as the mesquite treatment at the cultural and recreation sites.

Direct Effects

Herbicide toxicity to aquatic species is measured using LC50, which is the concentration of herbicide in water required to kill half of the study animals. It is measured in micrograms (μg) of pesticide per liter (L) of water. Habitat (Imazapyr) is considered to have low toxicity to fish and invertebrates. The LC50s for various species including rainbow trout (*Oncorhynchus mykiss*), bluegill sunfish (*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), and the water flea (*Daphnia magna*) are all $>100 \mu\text{g}\cdot\text{L}^{-1}$ (Tu *et al.* 2001). Imazapyr has recently been shown to have no effect on metabolic functions of Chinook salmon (*O. tshawytscha*), even at high concentrations. In addition, the 96-hour LC50 for young rainbow trout was determined to be a higher concentration of Imazapyr than is available commercially. Based on these findings, the direct effect of Imazapyr, when applied according to the label, MSDS, and PUP Habitat on Gila chub would be negligible as well as not measurable. The herbicide (Imazapyr) will be used for trees in the water or within ten feet of the water's edge. Trace amounts of herbicide could enter the water upon application; however, it would be almost immediately diluted and dispersed. In the event of a spill, Imazapyr would also have a negligible effect based on the findings of the Chinook salmon and rainbow trout studies.

Average soil half-life for triclopyr (Garlon 4 and Remedy) is 30 days. Garlon 4 and Remedy contain the acid and ester formulations of triclopyr, both of which degrade quickly in sunlight and readily adhere to soil particles, making them less mobile in the environment. Warm, moist soils have a higher organic content and are able to more readily metabolize herbicides. Within the Gila Box RNCA, soils along the channel will be more moist, and herbicide dissipation would likely be primarily through microbial degradation. Soils on upper terraces will be much drier and photodegradation would likely be the primary dissipation mechanism. Movement of triclopyr through surface and subsurface runoff is negligible in desert areas with minimal

rainfall. Since triclopyr will only be used to treat tamarisk trees and mesquite stumps outside of the ten-foot buffer, mobility of the herbicide through soil to the river system is highly unlikely to have an impact to Gila chub. In the event of an herbicide ground spill, you have proposed to remove the contaminated soil and place the soil in plastic containers. The contaminated soil would then be taken to an appropriate hazardous materials facility for disposal.

In the unlikely (see precautions described earlier) event of a spill directly into the water during the transport of Garlon 4 and Remedy, there could be negative impacts to Gila chub. The ester form of triclopyr is not water-soluble and can persist in aquatic environments; it can be extremely toxic to fish and aquatic invertebrates. Water temperature, pH, and sediment load determine the rate of degradation. The LC50s (96-hour) for rainbow trout and bluegill sunfish are $0.74 \mu\text{g}\cdot\text{L}^{-1}$ and $0.87 \mu\text{g}\cdot\text{L}^{-1}$, respectively. The ester form of triclopyr readily accumulates as acid in fish tissues and can be lethal at adequate concentrations or intervals (Tu *et al.* 2001). Findings have suggested that the effects of triclopyr in flowing water would not be harmful to fish. However, in heavily shaded bodies of water with slow dissipation, there is a risk of lethal contamination (Kreutzweiser *et al.* 1994). There is a slightly higher risk of concentration in Bonita Creek due to the presence of multiple beaver (*Castor canadensis*) dams and denser vegetation along the stream. Herbicide application crews will carry block seines and dip nets with them throughout the treatment process. In the event of an herbicide spill directly into the water, crews will set up a block seine approximately 200 meters below the spill and directly above the spill. Crews will monitor for distressed fish, using dip nets if necessary, and if any Gila chub are detected, your agency will halt all operations and contact the FWS before resuming the action.

Riparian areas are important in providing quality habitat for this fish. Increased riparian vegetation has been documented to increase instream cover, increase overhanging cover, buffer streams from incoming sediment and other pollutants, build a sod of herbaceous plants that form undercut banks, buffer temperature extremes, increase habitat complexity, and increase terrestrial invertebrate prey for fish (Platts 1991). Removal of tamarisk trees will temporarily reduce canopy cover over the stream. Most of the trees removed will be small in size (saplings), a size class which is unlikely to contribute a substantial amount to the overall canopy. Removal of this size class of tamarisk trees is therefore unlikely have an adverse effect on water temperature. In areas where larger trees are removed, there could be a slight, localized increase in water temperature. However, these areas would be isolated. Bank stability is not likely to be affected since the roots of treated trees will remain in the ground.

The removal of tamarisk trees could temporarily create open areas until native vegetation becomes established. This could allow better access to the stream for incidental trespass livestock. Livestock grazing at locations where large numbers of animals congregate and non-point source pollution can impair water quality, resulting in alteration of fish communities or fish kills. The impact generally comes from increased levels of ammonia (NH_3) and Nitrite (NO_2) and decreased levels of dissolved oxygen (O_2) (Taylor *et al.* 1989 and Cross 1971). The effects of this type of pollution are increased under conditions of limited water supply such as in small ponds and springs. Sedimentation from erosion caused by livestock can impair spawning areas and reduce aquatic productivity, which can affect food production (Ward 1992, Meehan 1991).

Despite the potential ramifications of grazing, it is anticipated that the impacts within the project area will be negligible so as not to be measurable.

Indirect Effects

Although Habitat (Imazapyr) is considered to have a low toxicity to fish and invertebrates, its half-life in soil ranges from one to five months. Imazapyr is easily dissipated through photolysis in water, but will only be dissipated in soils through microbial degradation. Since it does not bind readily with soil particles, imazapyr can remain available in the environment (a soil pH-dependent effect). Non-target plants can be affected by root uptake of herbicide from treated soil. Injury or loss of these plants may result if the herbicide is applied on or near non-target plants, on areas where their roots extend, or in locations where the treated soil may be washed or move into contact with their roots. Given that the herbicide will be applied directly to the vegetation rather than using a broadcast spray method, imazapyr is not likely to reach the soil when used properly. If Imazapyr were to be spilled onto the ground, however, its persistence in the soil could potentially have impacts on non-point vegetation. It could also prevent vegetation from becoming established in the spill area if soil conditions are not conducive for degradation (Tu *et al.* 2001).

Due to the low toxicity of imazapyr in aquatic environments, there would be no impact if the herbicide were to enter the river through surface or subsurface runoff.

Within the Gila Box RNCA, there is an upward trend for re-establishment of native vegetation due to changes in management practices; this is supported by the natural flow regime of the Gila River. This project will enhance that upward trend and, over time, dominance by native vegetation and vegetation incorporation into the streambed (as woody debris) may render the Gila River and Bonita Creek more hospitable to native species, including Gila chub.

Bonita Creek was excluded from the designation of critical habitat for Gila chub and none exists elsewhere in the Gila Box RNCA, therefore, none will be affected.

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.

Many activities without a Federal nexus occur and are expected to continue to occur in Gila chub habitat, and in the watersheds of such habitat throughout the project area. Farming and ranching activities occur in and along the Gila River, on private and state lands. Groundwater pumping, surface water diversions, agricultural return flows, flood control activities, and channelization projects could potentially alter flows through the project area. Recreational activities including off-highway vehicle (OHV) use, particularly in the river bottom, both up stream and down from the Gila Box NRCA boundary, will continue and will likely increase. You and Phelps Dodge Mining Corporation have completed a land exchange that would facilitate the construction of the

Dos Pobres-San Juan open pit mine, on private land on the uplands within five miles of the Gila Box RNCA. Although the land exchange has a Federal nexus and has been consulted upon (June 11, 2002, file number 02-21-99-F-007), Phelps Dodge actions after the exchange will take place on private lands without a nexus. There is movement within watershed groups in Arizona and New Mexico to do extensive tamarisk control actions upstream of the Gila Box RNCA. The recently-enacted Arizona Water Settlement Act will likely have an impact on listed and proposed species, although the extent of this impact, and the extent of Federal nexuses associated with actions stemming from the statute, are unknown at this time.

Conclusion – Gila Chub

After reviewing the current status of the Gila chub, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the species. Critical habitat has been designated for the Gila chub but none exists in the action area; none will be affected, adversely modified, or destroyed. The rationale for our conclusion is as follows:

- The proposed action is anticipated to result in an increase in the extent of native riparian vegetation within the Gila Box RNCA, including Bonita Creek. Bonita Creek is inhabited by Gila chub, which are anticipated to benefit from the presence of additional native vegetation and the natural ecological and fluvial functions associated with such species. Temporary effects to stream stability are not anticipated, as tamarisk root systems will be left in place. Temperature increases are not anticipated due to the selective treatment techniques, rapid recovery of native vegetation, and the north-south orientation of much of Bonita Creek. The BLM will monitor the efficacy of the vegetation treatments and adjust protocols as necessary to ensure success.
- Herbicides and adjuvant will be used only in accordance with product labeling and the respective MSDSs and PUPs. Herbicides will be mixed off-site and double-packaged in leak- and waterproof containers for transport. No more than 5 gallons of herbicide/adjuvant mixture will be carried into the Gila Box RNCA at any one time.
- Tamarisk located in the water or within ten feet of the water's edge will be treated with an herbicide and adjuvant that are approved for aquatic use. BLM staff and/or the contractor will remove contaminated soil in the event that herbicide is spilled in terrestrial systems within the Gila Box RNCA. The unlikely inadvertent drift or runoff of pesticides to aquatic habitats may reach the effect threshold for Gila chub, based on studies of other fishes. In the latter scenario, crews will set up block seines and salvage any fish noted to be in distress.
- Mesquite treatment at the cultural and recreation sites would occur well away from the water's edge, normally beyond 50 feet, but as a rule at least 10 feet.
- Herbicides will be applied by certified applicators in a manner intended to minimize drift, and thus contamination, of the aquatic environment. Unintended application to non-

target, native plants will also be minimized by such practices. Applications will be monitored via the use of nontoxic dyes mixed with the herbicide.

Razorback Sucker

The Razorback sucker's Status of the Species and Environmental Baseline sections from the Gila Box RNCA IAP consultation and Reinitiated Safford RMP consultation remain up-to-date and are incorporated herein via reference.

Direct, Indirect, and Cumulative Effects

The analysis of the proposed action's effects to Gila chub, above, is based upon generally-accepted measures of effects, and is based on the analyses of effects to surrogate fish species available in the scientific literature. The Gila chub effects analysis is thus sufficiently general to be applicable to razorback sucker, and is hereby incorporated via reference. Similarly, we also incorporate the Cumulative Effects sections from the Gila Box RNCA IAP consultation and Reinstated Safford RMP consultation.

The aforementioned potential for Garlon 4 and/or Remedy to be released to the aquatic environment via an accidental spill constitutes an effect to the razorback sucker critical habitat's Primary Constituent Element (PCE) pertaining to water. The species' critical habitat Final Rule (59 FR 13374) (FWS 1994) describes this PCE as including "...a quantity of water of sufficient quality (i.e., temperature, dissolved oxygen, *lack of contaminants* [italics added], nutrients, turbidity, etc.) that is delivered to a specific location in accordance with a hydrologic regime that is required for the particular life stage for each species." The temporary spate of contamination associated with a Garlon 4 and/or Remedy spill, determined above to be potentially lethal to Gila chub present in Bonita Creek, constitutes an adverse effect on razorback sucker critical habitat. This effect is measurable, but temporary in duration. Moreover, there is an immeasurably low likelihood that an individual razorback sucker or population of same will be adversely affected by an herbicide spill. The razorback sucker has been extirpated from the Gila River despite massive reintroduction efforts from 1981-1990 (R. Clarkson, P. Marsh, J. Stefferud, and S. Stefferud, Pers. Comm. to H. Blasius)(BLM 2005). It is also immeasurably unlikely any razorback suckers that may occupy the site in the future will be affected by spilled herbicides or post-spill Gila chub fish salvage efforts associated with this project.

Conclusion

After reviewing the current status of the razorback sucker, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the species. Razorback sucker critical habitat exists in the action area and will be temporarily affected. None will be adversely modified or destroyed. The rationale for our conclusions is as follows:

- The proposed action is anticipated to benefit the species and its critical habitat via a increase in the extent of native riparian vegetation within the Gila Box RNCA.

- Herbicides and adjuvant will be used only in accordance with product labeling and the respective MSDSs and PUPs. Herbicides will be mixed off-site and double-packaged in leak- and waterproof containers for transport. No more than 5 gallons of herbicide/adjuvant mixture will be carried into the Gila Box RNCA at any one time.
- Tamarisk located in the water or within ten feet of the water's edge will be treated with an herbicide and adjuvant that are approved for aquatic use. BLM staff and/or the contractor will remove contaminated soil in the event that herbicide is spilled in terrestrial systems within the Gila Box RNCA.
- Mesquite treatment at the cultural and recreation sites would occur well away from the water's edge, normally beyond 50 feet, but as a rule at least 10 feet.
- Herbicides will be applied by certified applicators in a manner intended to minimize drift, and thus contamination, of the aquatic environment. Unintended application to non-target, native plants will also be minimized by such practices. Applications will be monitored via the use of nontoxic dyes mixed with the herbicide.
- Herbicide spills to aquatic habitat will temporarily affect razorback sucker critical habitat but are immeasurably unlikely to harm any razorback suckers; the species is likely extirpated from the Gila River system. We are not currently aware of any plans to reestablish the species within the 10-year project timeframe.

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 behavioral 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 sections 7(b)(4) and 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.

The measures described below are non-discretionary, and must be undertaken by the BLM so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The BLM has a continuing duty to regulate the activity covered by this incidental take statement. If the BLM: (1) fails to assume and implement the terms and conditions; or (2) fails to require the applicant 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. In order to monitor the impact of incidental take, the applicant must report through the BLM 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)).

Gila Chub

Amount or Extent of Take

We anticipate that Gila chub will be subject to incidental take from the following sources on two occasions over the 10-year life of the proposed action.

- Mortality or injury of Gila chub may result from direct effects of inadvertently-spilled herbicides and post-spill seining, netting, and repatriation in the event of an accidental spill. The likelihood that such a spill may occur during any one treatment visit is low, but we consider it reasonably certain to occur at some point during twice-annual applications over the ten-year duration of the proposed action.
- Sub-lethal effects of pesticide exposure from the spill scenario described above, but at less-than the LC50, could affect Gila chub through weight loss, decreased resistance to diseases, sterility, reduced egg production, and low predator avoidance (Helfrich *et al.* 1996).

Incidental take would likely occur only in areas of slow dissipation where the river is heavily shaded by dense vegetation. In Bonita Creek there is a slightly higher risk of concentration due to the presence of multiple beaver dams and denser vegetation along the stream. Due to the secretive nature of Gila chub and their preference for quiet, deep pools with undercut banks and overhanging vegetation, boulders, and fallen logs (Rinne and Minckley 1991), a spill occurring near a beaver dam could result in incidental take of approximately six to twelve individuals. Incidental take of individuals resulting from soil transport of herbicides is highly unlikely since Habitat (imazapyr) has low toxicity in water, and Garlon 4 (triclopyr) will not be used within ten feet of the water's edge and degrades readily in soil.

Incidental take is also anticipated to occur should block seining, dip netting, and transport of Gila chub occur following an inadvertent herbicide spill occur. It is estimated that up to 25 Gila chub could be harmed or harassed by implementation of this minimization measure.

The total anticipated incidental take of Gila chub is therefore estimated to be up to 24 individuals (no more than twelve per event presuming two spills occur during the 10-year project life) harmed or killed by herbicide exposure, and up to 50 individuals (no more than 25 per event presuming two spills occur during the 10-year project life) harmed or harassed by seining, dip netting, transport, and repatriation following a spill.

Effect of the Take

In this biological opinion, we find that the anticipated level of take is not likely to jeopardize the continued existence of the Gila chub.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize take of Gila chub:

1. The BLM shall minimize the incidental take of Gila chub resulting from inadvertent herbicide spillage.
2. The BLM shall monitor incidental take resulting from the proposed action and report to the FWS the findings of that monitoring.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the BLM must comply with the following Terms and Conditions, which implement the Reasonable and Prudent Measures described above and outline required reporting/monitoring requirements. These Terms and Conditions are non-discretionary.

- 1.1 The following Terms and Conditions implement Reasonable and Prudent Measure 1: The BLM has already proposed block seining and dip-netting of Gila chub in the event of an herbicide spill into the aquatic environment. This Term and Condition directs that the BLM shall immediately repatriate any Gila chub recovered through such activity to waters within the same stream which have not been contaminated by the spill.
- 1.2 The BLM shall provide field training in avoidance and minimization measures to all agency and contract staff that are to be operating in the field.

The following Term and Condition implements Reasonable and Prudent Measure 2:

- 2.1 Monitoring of incidental take shall include observations of Gila chub made in the course of implementing the activities described in Term and Condition 1.1, above, as well as reporting on any other mortality of Gila chub noted in the field. This monitoring shall occur annually in any year in which herbicide treatments occur. This monitoring report may be submitted as part of the monitoring requirements associated with our Gila Box RNCA IAP consultation and Reinstated Safford RMP consultation.

Razorback Sucker

Amount or Extent of Take

We do not anticipate that implementation of the proposed action will result in the incidental take of any razorback suckers during its 10-year term of implementation.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 2450 W. Broadway Rd, Suite 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 if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office 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 hereby recommend that the BLM carry out, and report to us on the progress of, the following Conservation Measures

- You should make widely available the results of efficacy monitoring for the proposed action so as to inform other regional efforts to remove tamarisk and restore native riparian vegetation.
- You should continue with restorative management of the Gila Box RNCA to improve habitat for native terrestrial and aquatic plant and animal species.
- You should participate with us and the Arizona Game and Fish Department in the development and implementation of a recovery plan for the Gila chub.
- You should coordinate with the Arizona Game and Fish Department and us to reestablish Gila chub and razorback sucker into suitable habitat and to control nonnative aquatic species in those habitats.
- You should continue to conduct, fund, or otherwise support comprehensive surveys for Gila chub and razorback sucker in all potential or suitable habitats on BLM lands.
- You should continue working with the San Carlos Apache Tribe to minimize trespass livestock in Bonita Creek.
- You should acquire from willing sellers and manage, in accordance with the Gila Box Plan, private lands along Bonita Creek.

REINITIATION NOTICE

This concludes formal consultation on the proposed Tamarisk Control Project. 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. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate your efforts to restore native riparian vegetation and to identify and minimize effects to listed species from such efforts. We have assigned log number 02-21-05-F-0727 to this consultation. Please refer to this number in future correspondence regarding this consultation. Any questions or comments should be directed to Jason Douglas at (520) 670-6150 (x226) or Sherry Barrett (x223), of my Tucson staff.

/s/ Steven L. Spangle

cc: Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ
Manager, Gila Box Riparian National Conservation Area, Safford, AZ
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Regional Manager, Arizona Game and Fish Department, Tucson, AZ

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Literature Cited

- Bureau of Land Management (BLM). 2005. Biological Evaluation for Tamarisk Removal in the Gila Box Riparian National Conservation Area, Graham and Greenlee Counties, Arizona. 47 pp. with appendices.
- Cross, F.B. 1971. Effects of pollution, especially from feed lots, on fishes of the Neosho River basin. Kansas Water Resources Institute, Project Completion Report, Contribution number 79 A-026-KAN, Manhattan.
- English, H.C., A.E. Graber, S.D. Stump, H.E. Telle, and L.A. Ellis. 2006. Southwestern Willow Flycatcher 2005 Survey and Nest Monitoring Report. Technical Report 248. Research Branch, Wildlife Management Division, Arizona Game and Fish Department, Phoenix, Arizona. 82 pp.
- Helfrich, Weigmann, Hipkins, Stinson. 1996. Pesticides and Aquatic Animals: A Guide to Reducing Impacts on Aquatic Systems. 420-013.
- Kreutzweiser, D.P., Holmes, and D.C. Eichenberg. 1994. Influence of exposure duration on the toxicity of triclopyr ester on fish and aquatic insects. *Archives of Environ. Contam. Toxic.* 26:124-129.
- Meehan, W.R. (ed.). 1991. Influences of forest and rangeland management on salmonid fishes and their habitats. American Fisheries Society, Special Publication 19, Bethesda, Maryland.
- Platts W.S. 1991. Livestock grazing. P. 389-424. *In* W. R. Meehan (ed.), Influences of forest and rangeland management on salmonid fishes and their habitats. Amer. Fisheries Soc. Sp. Publ. 19:389-423, Bethesda, Maryland.
- Rinne, J. and W. L. Minckley. 1991. Native fishes of arid lands: a dwindling resource of the desert Southwest. Gen. Tech. Rep. RM-206. U. S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.
- Taylor, F.R., L.A. Gillman, and J.W. Pedretti. 1989. Impact of cattle on two isolated fish populations in Pahranaagat Valley, Nevada. *Great Basin Nat.* 49:491-495.
- Tu, M., Hurd, C. & J.M. Randall. 2001. Weed Control Methods Handbook, The Nature Conservancy, <http://tncweeds.ucdavis.edu>, version: April 2001.
- U.S. Fish and Wildlife Service (FWS). 2005. Endangered and Threatened Wildlife and Plants; Listing Gila Chub as Endangered With Critical Habitat. *Federal Register* 70(211):66664-66721.
- _____. 2004. Southwestern Willow Flycatcher (*Empidonax traillii extimus*) Final Recovery Plan. Division of Ecological Services. Albuquerque, NM.

_____. 1994. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Colorado River Endangered Fishes: Razorback Sucker, Colorado Squawfish, Humpback Chub, and Bonytail Chub. Federal Register. 59(54):13374-13400.

Ward, J.V. 1992. Aquatic insect ecology; 1. Biology and habitat. John Wiley & Sons, Inc. New York.

Appendix A: Southwestern Willow Flycatcher Concurrence

Management of the Gila Box RNCA is guided at the coarse scale by the *Safford District Resource Management Plan* (Safford RMP). We are presently finalizing our biological opinion on the Safford RMP (See Consultation History). The proposed project's action area is within the Gila Box RNCA, the management of which is guided by the Gila Box RNCA IAP. We herein incorporated the flycatcher's Status of the Species and Environmental Baseline section from our Gila Box RNCA consultation and Reinitiated Safford RMP Consultation via reference.

The flycatcher breeds at locations within or in close proximity to the up- and downstream portions of the Gila Box RNCA, and the Conservation Area serves as migration habitat for the species. We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the flycatcher. Our concurrence is based on the following analyses:

- The project locations on the Gila River and Bonita Creek do not exhibit flycatcher breeding habitat, so the temporal changes in habitat will not affect breeding.
- The confinement of activities within flycatcher breeding habitat to the early spring (March 1 to March 31) and autumn/early winter (October 1 to January 1) time frames will avoid disturbance to migrating flycatchers.
- Adherence to label, MSDS, and PUP restrictions on herbicide transport and application will increase the efficacy of tamarisk removal and minimize the inadvertent mortality of non-target native plant species. The mortality of native mesquite trees at the cultural and recreation sites is not anticipated to reduce flycatcher habitat within the Gila Box RNCA.
- Surveys conducted in 2005 detected no flycatchers at the three survey sites located within or adjacent to the Gila Box (Earven Flat, Spring Canyon, and Bonita Creek) (*English et al.* 2006).
- There is no flycatcher critical habitat within the Gila Box RNCA.