

(928) 348-4400

6800

May 4, 2005

Dear Cooperating Agency and Affected Parties:

The Bureau of Land Management (BLM) Safford Field Office (SFO), in coordination with the U.S. Fish and Wildlife Service (Service), The Nature Conservancy, Arizona Game and Fish Department (AGFD), Bureau of Reclamation (BOR), Arizona State Land Department (ASLD), and the U.S. Forest Service (FS), jointly and cooperatively propose to reestablish Desert Pupfish, Gila Topminnow, Loach Minnow, and Spikedace, and augment Gila Chub, Longfin Dace, Speckled Dace, Sonora Sucker, Desert Sucker, and Lowland Leopard Frog into multiple springs and streams within the watersheds of the Muleshoe Ecosystem. Field trips to the project sites took place on four different occasions with representatives from the cooperating agencies during the scoping process.

Enclosed is the combined Finding of No Significant Impact (FONSI) and Decision Record (DR) for this project. This decision of the authorized officer is subject to appeal (43 Code of Federal Regulations Part 4). A notice of appeal must be filed with the officer who made the decision within 30 days of the date of publication or date of service [4.411(a)]. Appeals shall be addressed to: Bonnie Winslow, Assistant Field Office Manager, Safford Field Office, at 711 S. 14th Avenue, Safford, AZ 85546.

Copies of the Finding of No Significant Impact and the supporting Environmental Assessment No. AZ-040-2004-0077 is available upon request. Thank you for your involvement in this project. If you have any questions regarding this notice, please contact Heidi Blasius, SFO Fisheries biologist, at (928)348-4400 or Marlo Draper, Planning and Environmental Coordinator at (928)348-4400.

Sincerely,

Marlo Draper
Planning and
Environmental
Coordinator

Enclosure:

- FONSI/Decision Record – Muleshoe

FONSI/DECISION RECORD

EA Number: AZ-040-2004-0077

Lease/Serial/Case File No. Not Applicable

BLM Office: Safford Field Office

DECISION:

It is my decision to accept the proposed action as stated in EA (AZ-040-2004-0077). This will include the reestablishment of two endangered fish species, desert pupfish (*Cyprinodon macularius macularius*), Gila topminnow (*Poeciliopsis occidentalis occidentalis*), and two threatened fish species, loach minnow (*Tiaroga cobitis*) and spikedace (*Meda fulgida*); and augmentation of one federally proposed as endangered fish species, Gila chub (*Gila intermedia*), four BLM sensitive fish species, longfin dace (*Agosia chrysogaster*), speckled dace (*Rhinichthys osculus*), Sonora sucker (*Catostomus insignis*), desert sucker (*Pantosteus clarki*), and one wildlife of special concern, lowland leopard frog (*Rana yavapaiensis*) into suitable springs and streams located within the Muleshoe Ecosystem. Preferably, this action will be initiated in the autumn of 2004 or spring 2005 and continue until these fish and frog species have been reestablished in up to three sites or it has been determined that there is a limiting factor that will not allow the fish or frog species to survive.

FINDING OF NO SIGNIFICANT IMPACTS:

Based upon Environmental Assessment AZ-040-2004-0077, I conclude that this action is in conformance with the approved land use plan (Safford District Resource Management Plan) and will result in no significant impact to the human environment. Therefore, preparation of Environmental Impact Statement is not necessary.

RATIONALE FOR DECISION:

The purpose of the proposed action is to assist in the recovery of two endangered fish species, desert pupfish and Gila topminnow, two threatened fish species, loach minnow and spikedace, one federally proposed as endangered fish species, Gila chub, one wildlife of special concern, lowland leopard frog, and four sensitive fish species, longfin dace, speckled dace, Sonora sucker, and desert sucker.

The project will assist in establishing and securing new reproductive, self-sustaining populations of the above mentioned species within their historical range. This is vital because the fishes of the Gila River system are all biologically imperiled to various degrees and are included on Federal, State, and BLM sensitive species lists. Likewise, ranid frogs are equally imperiled and experiencing declines and die-offs. Reasons for decline of these species are well documented in published literature and recovery plans. Introduction and spread of nonnative aquatic species continues to be a major factor in displacement of native species. Habitat destruction from a variety of human activities has been an equal interactive factor. Furthermore, Section 7(a)(1) of the Endangered Species Act (ESA) directs Federal agencies to utilize their authorities to carry out affirmative conservation programs that would recover endangered and threatened species (50

CFR 402.01). The Bureau of Land Management is directed to encourage or initiate the reintroduction of listed wildlife, fish, and plants onto suitable habitat when such actions promote recovery of the species.

The following elements have been analyzed and would not be affected: Area of Critical Environmental Concern, Wilderness, Threatened and Endangered Animals, Invasive/Noxious Plants, Livestock Grazing, Recreation, Prescribed Fire, and Land Ownership/Private Property Rights.

MITIGATION MEASURES:

Mitigation measures are recommended actions to reduce, avoid or offset the potential adverse environmental consequences of an action. The following measures would be implemented for the project:

1. The BLM shall monitor incidental take resulting from the proposed action and report to the FWS the findings of that monitoring.
 - a. BLM shall monitor the project area that could be affected by the proposed action to ascertain take of individuals of the species and/or streambank and channel degradation that could cause harm or harassment to the species. The monitoring will be accomplished in tandem with the annual monitoring described in the proposed action for use in determining the status of stocked populations of these species. Monitoring will include, at a minimum, an assessment of any streambank damage that has occurred over the past year along wetted portions of the channel currently supporting stocked fish species. Special emphasis should be placed at any road or trail crossings of the streams at these sites.
 - b. BLM shall submit annual monitoring reports to the Arizona ecological Services Office by March 15 of each year beginning in year two of project implementation. These reports shall briefly document for the previous calendar year the effectiveness of the terms and conditions and locations of listed species observed. The report shall make recommendations for modifying or refining these terms and conditions to enhance listed species protection or reduce needless hardship on the BLM.
2. The BLM shall post a sign at the trailhead near the TNC headquarters advising recreationists of the presence of threatened and endangered fish in the streams and requesting that they cross streams only as necessary and minimize damage along stream corridors.
3. BLM shall provide public information and education pertaining to Arizona's native fish and amphibians, reasons for their decline, and conservation and management tools currently being used to recover them.
4. BLM shall take no action that would result in increased grazing pressure at the proposed project sites.

cc

Mary Richardson, U.S. Fish and Wildlife Service
Dr. Paul Marsh, AZ State University, School of Life Sciences
Ken Wiley, AZ Chapter of The Nature Conservancy
Stephen Williams, AZ State Land Department
Rob Clarkson, U.S. Bureau of Reclamation
Gerry Perry, AZ Game and Fish Department, Region V
Bob Broscheid, Habitat Branch, AZ Game and Fish Department
Rob Bettaso, Research Branch, AZ Game and Fish Department
Andrew and Stephanie Smallhouse, Carlink Ranch
Tom Orum, Saguaro-Juniper Association
Brian Hartman, C-Spear LLC

ENVIRONMENTAL ASSESSMENT

REESTABLISHMENT OF DESERT PUFFISH, GILA TOPMINNOW, LOACH MINNOW, AND SPIKEDACE, AND AUGMENTATION OF GILA CHUB, LONGFIN DACE, SPECKLED DACE, SONORA SUCKER, DESERT SUCKER, AND LOWLAND LEOPARD FROG INTO MULTIPLE SPRINGS AND STREAMS WITHIN THE WATERSHEDS OF THE MULESHOE ECOSYSTEM

EA Number: AZ-040-2004-0077

Lease/Serial/Case File No. Not applicable

Applicant: U.S. Bureau of Land Management

BLM Office: Heidi B. Blasius, Safford Field Office

Location of Proposed Action: Muleshoe Ranch, Hot Springs, Redfield, and Cherry Springs canyons (see map).

Conformance With applicable Land Use Plan

This proposed action is subject to the following land use plan:

Name of Plan: Safford District Resource Management Plan (RMP), Environmental Impact Statement (EIS).

Date Approved: Safford District (RMP) / (EIS): Record of Decision (ROD) Part I (September 1992) and Part II (July 1994).

The proposed action has been reviewed to determine if it conforms to the applicable land use plan as required by 43 CFR 1610.5.

This plan is in conformance with the applicable land use plan:

CHECK ONE

(X) YES () NO

Remarks: Muleshoe (EMP): Finding of No Significant Impact/Decision Record (May 1998). The Muleshoe Ecosystem Management Plan and Environmental Assessment (Page 67) states, "Maintain and enhance the diversity of native fish and wildlife species of the Muleshoe Ecosystem by re-establishing extirpated native species to the Muleshoe and by removing threats to, and supplementing populations of, or extending the ranges of existing native species on the Muleshoe over the life of the plan."

Bureau of Land Management Manual 1745 requires that land use plans identify fish, wildlife, and plants species for introduction, transplant, augmentation, and reestablishment into suitable habitats.

"By 2005, evaluate habitat conditions in order to assess the feasibility of reestablishing, extending the range of, or supplementing populations of the following wildlife species on the Muleshoe planning area: Desert bighorn sheep (*Ovis canadensis mexicana*), Gould's Turkey (*Meleagris gallopavo mexicana*), **Gila topminnow** (*Poeciliopsis occidentalis occidentalis*), **Desert pupfish**

(*Cyprinodon macularius macularius*), **Loach minnow** (*Tiaroga cobitis*), **Spikedace** (*Meda fulgida*), **Gila chub** (*Gila intermedia*).”

The Safford District Resource Management Plan/Environmental Impact Statement (Page 135) states, “animal species receiving the highest priority for funding and habitat improvement projects are: 1) federally listed threatened and endangered species, 2) priority wildlife species as identified by the Bureau of Land Management (BLM) in cooperation with the Arizona Game and Fish Department (AGFD), and 3) other species, habitats or features of local importance.”

The Muleshoe Native Fish Planning Team evaluated the proposed action of reestablishing and augmenting populations of native fish and frog. The Muleshoe Native Fish Team was formed to facilitate the process of reestablishing, extending the range of, or supplementing populations of native fish within the Muleshoe Ecosystem. The team consists of biologists from BLM, United States Fish and Wildlife Service (Service), the Arizona Chapter of The Nature Conservancy (TNC), AGFD, Arizona State University (ASU), Bureau of Reclamation (BOR), United States Forest Service (USFS), and Arizona State Lands Department (ASLD).

Related Documents: The proposed reestablishment for desert pupfish, Gila topminnow, loach minnow, and spikedace, into Hot Springs, Redfield, and Cherry Springs canyons is consistent with the draft revised Gila Topminnow Recovery Plan (Weedman, 1999, not yet signed by the USFWS), Desert Pupfish Recovery Plan (USFWS, 1993), Loach Minnow Recovery Plan (USFWS, 1986b), and Spikedace Recovery Plan (USFWS, 1986c).

The proposed augmentations of Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog into suitable drainages within the Muleshoe Ecosystem are consistent with proactive conservation and management activities to prevent native species from declining in numbers or population and becoming imperiled.

The Muleshoe ecosystem planning boundary encompasses the Muleshoe Cooperative Management Area (CMA) boundary. The CMA is jointly managed by the BLM, United States Forest Service (FS), and The Arizona Chapter of the Nature Conservancy through a cooperative management agreement.

PURPOSE/NEED FOR PROPOSED ACTION

The purpose of the proposed action is to assist in the recovery of two endangered fish species, desert pupfish and Gila topminnow, two threatened fish species, loach minnow and spikedace, one federally proposed as endangered fish species, Gila chub, one wildlife of special concern, lowland leopard frog (*Rana yavapaiensis*), and four sensitive fish species, longfin dace (*Agosia chrysogaster*), speckled dace (*Rhinichthys osculus*), Sonora sucker (*Catostomus insignis*), and desert sucker (*Pantosteus clarki*).

The project will assist in establishing and securing new reproductive, self-sustaining populations of the above mentioned species within their historical range. This is vital because the fishes of the Gila River system are all biologically imperiled to various degrees and are included on Federal, State, and

BLM sensitive species lists. Likewise, ranid frogs are equally imperiled and experiencing declines and die-offs. Furthermore, Section 7(a)(1) of the Endangered Species Act (ESA) directs Federal agencies to utilize their authorities to carry out affirmative conservation programs that would recover endangered and threatened species (50 CFR 402.01). The Bureau of Land Management is directed to encourage or initiate the reintroduction of listed wildlife, fish, and plants onto suitable habitat when such actions promote recovery of the species.

Numerous studies indicate that declines and extirpations of leopard frogs follow a pattern similar to native fish. Threats to both native fish and amphibian species are at least in part caused by predation by nonnative organisms, especially bullfrogs (*Rana catesbeiana*), fish in the family Centrarchidae (*Micropterus* spp., *Lepomis* spp.), crayfish (*Orconectes virilis* and possibly others), tiger salamanders (*Ambystoma tigrinum mavortium*), and several other species of fish (Clarkson and Rorabaugh, 1989; Sredl and Howland, 1994; Rosen, *et al.* 1994 and 1996; Fernandez and Bagnara, 1995; Fernandez and Rosen, 1996; Snyder, *et al.* 1996); disease; drought; floods; degradation and loss of habitat as a result of water diversions and groundwater pumping, poor livestock management, a history of fire suppression and grazing that increased the likelihood of crown fires, mining, development, and environmental contamination; disruption of metapopulation dynamics; and increased chance of extirpation or extinction resulting from small numbers of populations.

SPECIES STATUS:

The desert pupfish was federally listed as endangered with critical habitat in 1986 (USFWS, 1986a and 1993). The desert pupfish has suffered severe declines throughout its historical range due to the introduction and spread of nonnative predatory and competitive fishes, water impoundments, diversion, pollution, groundwater pumping, stream channelization, and other forms of habitat modification (USFWS, 1991a, USFWS, 1993). Currently, desert pupfish occur naturally in only about a dozen localities in the U. S. and Mexico. No remaining natural populations are in Arizona. However, more than 20 populations exist in refuge, schoolyard, and aquaria habitats. In addition, Dexter National Fish Hatchery maintains a stock from Cienaga de Santa Clara, Mexico.

The Gila topminnow was federally listed as endangered in 1967, without critical habitat (USFWS, 1967). Reasons for decline include past dewatering of springs and marshlands, impoundment, channelization, diversion, regulation of flow, land management practices that promote erosion and arroyo formation, and the introduction of predacious and competitive nonnative fishes (Miller, 1961, Minckley, 1985, and Minckley and Deacon, 1991).

Loach minnow was federally listed as a threatened species on October 28, 1986 (USFWS, 1986b), and critical habitat was designated on April 25, 2000 (USFWS, 2000). In Hot Springs Canyon, 19.1 km of unoccupied critical habitat was designated from the confluence with the San Pedro River upstream to the confluence with Bass Canyon and in Redfield Canyon; 22.3 km of unoccupied habitat was designated from the confluence with the San Pedro River upstream to the confluence with Sycamore Canyon. Available data justify up-listing the loach minnow to federally endangered status, and a reclassification proposal is pending.

Loach minnow are declining rangewide due to past dewatering of springs and marshlands, impoundment, channelization, diversion, regulation of flow, land management practices that

promote erosion and arroyo formation, and the introduction of predacious and competitive nonnative fishes (USFWS, 1991b). Currently, only 15 to 20 percent of their historical range is occupied. In occupied areas, loach minnow are common to very rare. Loach minnow are common in Aravaipa Creek, Blue River, and limited portions of the San Francisco, upper Gila and Tularosa rivers in New Mexico (USFWS, 2000).

Spikedace was federally listed as a threatened species on July 1, 1986 (USFWS, 1986c), and critical habitat was designated on April 25, 2000 (USFWS, 2000). In Hot Springs Canyon, 19.1 km of unoccupied critical habitat was designated from the confluence with the San Pedro River upstream to the confluence with Bass Canyon and in Redfield Canyon; 22.3 km of unoccupied habitat was designated from the confluence with the San Pedro River upstream to the confluence with Sycamore Canyon. Available data justify up-listing the spikedace to federally endangered status, and a reclassification proposal is pending.

Spikedace are experiencing population declines due to past dewatering of springs and marshlands, impoundment, channelization, diversion, regulation of flow, land management practices that promote erosion and arroyo formation, and the introduction of predacious and competitive nonnative fishes (USFWS, 1991c). Spikedace now occupy only 10 to 15 percent of their historical range. Presently spikedace are common in Aravaipa Creek and in a few localities on the upper Gila River, New Mexico (USFWS, 2000).

The Gila chub was federally designated as a candidate species on August 17, 1997 (62 FR 49402) and proposed endangered with critical habitat on August 09, 2002 (67 FR 51948). Gila chub populations are suffering range-wide losses and declines as a result of habitat degradation throughout the southwest attributable to water diversions, groundwater pumping, and increased sedimentation, erosion, and arroyo cutting from livestock grazing, mining, timber harvest, and off-highway vehicle use. In addition, the introduction and widespread establishment of competitive and predatory nonnative species (*e.g.*, fish, crayfish, bullfrogs, and turtles) have been identified as one of the major factors in the continuing decline of native fishes throughout the southwestern United States including the Gila River basin (Minckley, 1985; Minckley and Deacon, 1991). Moreover, parasites (*e.g.*, Asian tapeworm, Ich, and anchor worm) and disease introduced incidentally with nonnative species may jeopardize Gila chub populations.

Proposed critical habitat considered for Gila chub in this EA includes Hot Springs and Redfield canyons, as follows.

- Hot Springs Canyon: 1.1 km of creek extending below the Bass Canyon confluence downstream to the end of perennial flow, approximately 0.4 km below the Muleshoe Ranch Preserve boundary. Gila chub are rare throughout this reach due to the limited number of pools; however, Gila chub maybe locally abundant and common where suitable pool habitat exist. Hot Springs Canyon provides several primary constituent elements for Gila chub, including perennial pools, cover in the form of overhanging vegetation, root wads, undercut banks, and adequate water quality.
- Redfield Canyon: 3.6 km of creek extending from township 11 south, range 20 south, and

section 31 southeast continuing upstream to the confluence with Sycamore Canyon. Gila chub were first documented from Redfield Canyon in 1961. Subsequent surveys have documented Gila chub as being locally abundant and healthy in this segment of Redfield Canyon, likely due to its remoteness, limited impacts from humans, and limited grazing impacts.

Although not listed or proposed for listing, the longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog would also benefit from the proposed action due to declines throughout their historical ranges. Anthropogenic disruption and fragmentation of watersheds intensify the accumulative impact of isolated populations becoming extirpated with little potential for re-colonization from adjacent sources (Fagan, 2002). Thus efforts to augment or restore locally extirpated populations are essential to prevent a downward spiral of loss over a metapopulation or watershed level.

To recover desert pupfish, Gila topminnow, loach minnow, and spikedace, and to provide proactive conservation measures for Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog the following actions are necessary: protection of natural populations, reestablishment of new populations, establishment of refuge populations, development of protocols for the exchange of genetic material between reestablished populations, determination of factors affecting population persistence, and information and education to foster recovery efforts.

DESCRIPTION OF PROPOSED ACTION

Proposed Action: The Bureau of Land Management, Safford Field Office, in coordination with the Service, TNC, AGFD, ASU, BOR, ASLD, and USFS, jointly and cooperatively propose to stock desert pupfish, Gila topminnow, loach minnow, spikedace, and provide additional populations of Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog into Muleshoe ecosystem. The Muleshoe ecosystem comprises two major watersheds, Redfield Canyon, which drains 10.1 miles, Hot Springs Canyon, which drains 12.5 miles, and one minor watershed, Cherry Spring, which drains 0.7 miles. Collectively the three watersheds support seven perennial streams and are largely isolated from the major downstream river system, San Pedro River. While desert pupfish, Gila topminnow, loach minnow, and spikedace, will be introduced to the Muleshoe from off-site locations. The remaining unlisted and federally proposed species will be moved to suitable habitats within the same streams (Hot Springs or Redfield canyons) they occupy or to entirely fishless streams (Cherry Springs).

The initial stocking will occur during spring or autumn of 2005 and will consist of as many individuals as are available (up to 500 individuals) from source populations of desert pupfish, Gila topminnow, loach minnow, spikedace, Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog. To ensure genetic integrity a minimum of 500 fish species and 25 tadpoles is optimal. However, the determining factor will likely be what is available from the source population. Populations will be augmented over time, as needed, until self-sustaining populations become established. The number of individuals used in augmentation efforts will vary, depending on availability from source populations. Augmentations will continue at least once per year for a minimum of five years. At that time, the success of the effort will be evaluated for each species. If

any problems occur, management actions will be adjusted to correct or eliminate them. If at any time during that period, the multi-agency team determines that a situation exists which will preclude successful establishment of a species at a given area, augmentation efforts will be stopped for that species at that location until corrective action can be taken, if appropriate. If no corrective action is feasible, augmentation efforts will be discontinued at that site for that species.

Several potential stocking sites have been identified on both private and public lands through previous monitoring efforts and site visits by the Muleshoe Native Fish Planning Team. The Muleshoe Native Fish Team was formed to facilitate the process of reestablishing, extending the range of, or supplementing populations of native fish within the Muleshoe Ecosystem. The team consists of biologists from BLM, Service, TNC, AGFD, ASU, BOR, ASLD, and USFS.

Potential stocking sites on private lands include all suitable aquatic habitats on lands owned and managed by the Arizona Chapter of the Nature Conservancy. Potential stocking sites on public lands include all suitable habitats on lands owned and managed by Bureau of Land Management and United States Forest Service.

The Bureau of Land Management, Service, TNC, AGFD, ASU, BOR, ASLD, and USFS will work cooperatively in collecting, transporting, and stocking fish and frogs. Source populations will vary for the different species. Aravaipa Creek will serve as the source population for spinedace and loach minnow, which is consistent with the genetic lineage and origin in both the loach minnow (USFWS, 1991b) and spinedace recovery plans (USFWS, 1991c). The most appropriate genetic lineages for the Muleshoe Ecosystem, according to the draft revised Gila topminnow recovery plan (Weedman, 1999) and the desert pupfish recovery plan (USFWS, 1993) will be selected. The source populations for Gila topminnow will likely be from stock maintained at Arizona State University and may include any of the four genetic lineages, Bylas, Cienega Creek, Sharp Spring, or Monkey Spring. The above mentioned Gila topminnow lineages may be stocked separately into suitable habitats within the project areas to replicate multiple populations while maximizing separate genetic lineages. Desert pupfish will likely be collected from Cienega de Santa Clara, Mexico or Cibola National Wildlife Refuge, and may be supplemented with stock from established refuge habitats in Arizona and / or Dexter National Fish Hatchery, New Mexico.

Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog will be collected from multiple localities within the Muleshoe ecosystem for augmentation within Hot Springs and Redfield canyons and reestablishment to Cherry Springs canyon. These species will only be stocked in fishless or frogless sites within the selected drainages they occupy. This will be done since it is assumed genetic differences exist between these species from one system to the next. This will also eliminate any invasive plant, disease, or parasite being transported from one system to the next.

The fish and frog capture, transport, and release efforts will follow appropriate protocols and respective recovery plans, and will comply with the provisions of existing permits authorizing fish and frog stockings. Bureau of Land Management will coordinate stocking efforts with the Service, AGFD, TNC, ASU, BOR, ASLD, and USFS before stocking the sites. A sample from the source populations of fish to be stocked will be collected approximately six weeks before moving any fish.

This will allow for the USFWS, National Wild Fish Health Survey Program to test the fish submitted, provide results, and offer options upon detection of pathogens. Most external parasites are not considered pathogens of concern because they are present in all aquatic systems to some degree. If parasites appear to be a problem the fish can be treated with a formalin bath, administered at time of capture. If a virus or certain species of bacteria are detected the fish will be held in captivity and treated. Most bacterial treatments require a 14-day therapy of antibiotics. The other concern is Asian tapeworm infestation, which affects all species considered except suckers. Asian tapeworm is a problem if the receiving population does not already have the parasite or if the infestation is severe enough to impact the health of the infected fish.

Bureau of Land Management, Arizona Game and Fish Department, and United States Fish and Wildlife Service will transport fish to the proposed augmentation sites from a variety of sources. In addition, the terrain at the various augmentation sites can be rugged. For these reasons, a variety of transport methods will likely be used, and may include transport by helicopter, truck, mule, or backpack. Appropriate methodologies will be used, regardless of the type of transport provided. Motorized vehicles used to transport fish will stay on existing roads. No new roads or off road travel will be permitted.

Reestablishment efforts will be evaluated for success for each individual species. The stocking effort will be deemed successful if, after five years, monitoring reveals recruitment and survival at a specific site, such that the population becomes self-sustaining without need of further augmentations.

Monitoring will occur each year for the five years in which augmentations take place to determine the success of the project. If success cannot be determined within five years, monitoring may continue, but not for more than five years after stocking has been discontinued. Monitoring of stocking efforts will include, at a minimum, a determination of persistence of fish or frogs in the area, age classes present, and their relative percentages of the population at that site. Monitoring should continue as long as the species are present.

Where self-sustaining populations do not develop, based on the monitoring information collected, the team will determine if further augmentation is required to meet the success criteria beyond the initial five year period, or if a particular site or species should no longer be stocked.

The proposed action is consistent with on-going and foreseeable future land uses including: (1) prescribed burning within the Muleshoe watershed drainage, under the Muleshoe EMP Prescribed Burn Plan and associated environmental assessment, EA # AZ-060-98-004 approved in 1998, and (2) grazing activities as delineated in the Muleshoe Ecosystem Management Plan and Safford District Resource Management Plan and Environmental Impact Statement.

The following monitoring is included as part of the proposed action:

Monitor desert pupfish, Gila topminnow, loach minnow, spikedace, Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog populations, appropriate aquatic habitat variables, riparian vegetation, and stream banks at least annually, using accepted

BLM standards/methods.

Monitor for fish and frog kill immediately following the first runoff event following prescribed fires in the watershed. A report with monitoring results and observations will be submitted to the USFWS annually.

DESCRIPTION OF ALTERNATIVES

Alternative A: This alternative is identical to the proposed alternative except for Redfield Canyon not included in any further analysis as being a potential site for native fish and frog stockings due to potential private land issues downstream of the proposed stocking sites.

Alternative B: This alternative is identical to the proposed alternative except for Cherry Springs not included in any further analysis as being a potential site for native fish and frog stocking due to limited habitat suitability.

No Action Alternative: The no Federal action alternative provides the baseline for comparison of environmental effects of the action alternatives. Under the no action alternative, Bureau of Land Management, United States Fish and Wildlife Service, Arizona Chapter of the Nature Conservancy, Arizona Game and Fish Department, Arizona State University, Bureau of Reclamation, Arizona State Land Department, and United States Forest Service will not reestablish loach minnow, spikedace, Gila topminnow, desert pupfish; and augmentations within historical habitats for Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog into Hot Springs, Redfield, and Cherry Springs canyons, Muleshoe Ranch will not occur.

Alternatives Considered but Eliminated from Detailed Analysis:

The Muleshoe Native Fish Planning Team excluded alternative B from any further analysis after a site visit to Cherry Springs to assess habitat suitability for native fish and frogs. The Muleshoe Native Fish Planning Team walked the perennial portion of Cherry Springs and visually observed lowland leopard frog eggs, tadpoles, and aquatic invertebrates. The consensus of the group was that suitable habitat does exist for aquatic species (*e. g.*, native fish) in Cherry Springs.

EXISTING ENVIRONMENT

General Setting: The Muleshoe ecosystem is located in the Galiuro Mountains in southeastern Arizona within northern Cochise County and southern Graham County. In 1982, the Nature Conservancy acquired the Muleshoe Ranch and immediately removed livestock grazing. The rest from grazing is allowing natural processes to resume. In riparian areas an upward trend toward proper functioning condition is evident.

The Muleshoe is drained by three watersheds, Hot Springs, Redfield, and Cherry Springs, which collectively comprise more than 23 miles of perennial water. Hot Springs watershed comprises 12.5 miles of perennial flow, Redfield comprises approximately 10.1 miles of perennial flow, and Cherry Springs comprises 0.7 miles of perennial flow.

The riparian vegetation along Redfield and Hot Springs canyons and their tributaries is located

within the Mixed Broadleaf series of the Southwestern Riparian Deciduous Woodland biotic community. The dominant species include velvet ash (*Fraxinus velutina*), Arizona sycamore (*Planatus wrightii*), Arizona walnut (*Juglans major*), and willows (*Salix* sp.). Canyon bottoms are dominated by large, mature Fremont cottonwood (*Populus fremontii*) and Goodding willow (*Salix gooddingii*). Understory species include wild rye (*Elymus canadensis*), deer grass (*Muhlenbergia rigens*), seep willow (*Baccharis glutinosa*), sedges (*Carex spp.*), and rushes (*Juncus spp.*). Large mesquite (*Prosopis spp.*) bosques occur along stream terraces and provide refuge for birds, mammals, and reptiles. Previous overgrazing by livestock along these canyons resulted in heavy utilization of woody riparian tree seedlings and a subsequent lack of regeneration. A preliminary inventory in 1986, of the riparian areas in Redfield and Hot Springs canyons found channel banks and terraces lacking protective vegetative armoring, barren gravel bars, and cobble fields, which indicate a system not functioning at its potential.

Aquatic habitat diversity among the three sites varies greatly. Of the three, Redfield canyon contains the most diverse habitat. Redfield canyon has the most pools per kilometer, pools greater than 1.5 meters deep, most woody cover, and undercut banks. This type of habitat is preferred by both Gila chub and Sonora sucker. Hot Springs and Cherry Springs canyons both have fewer pools and less undercut banks. However, all three canyons have good to excellent bank stability due to no cattle grazing and trampling.

Existing Resources/Issues Relevant to the Proposed Action:

Areas of Critical Environmental Concern (ACEC): Areas of Critical Environmental Concern are places that receive special recognition because of their uniqueness and significance of their natural and cultural resources. The Safford District Resource Management Plan designated the 16,763 acre Hot Springs Watershed as an Area of Critical Environmental Concern (ACEC) to protect riparian, cultural, fish and wildlife species, including threatened and endangered species, and scenic values.

Threatened and Endangered (T&E) Animals: Table 1 lists threatened, endangered, proposed, and wildlife of special concern species within the project area.

Table 1. Special Status Wildlife and Plants of the Muleshoe Ecosystem

Species	Federal Endangered	Federal Threatened	Federal Proposed	BLM Sensitive Species	Wildlife of Special Concern in Arizona
Gila chub			X		X
Longfin dace				X	
Speckled dace				X	

Sonoran sucker				X	
Desert sucker				X	
Mexican garter snake					X
Canyon spotted whiptail	Former C2 Candidate Species				
Desert tortoise					X
Texas horned lizard	Former C2 Candidate Species				
Lowland leopard frog					X
Common black-hawk					X
Northern gray hawk				X	X
Peregrine falcon	X				X
Western yellow-billed cuckoo					X
Mexican spotted owl		X			X
Southwestern willow flycatcher	X				X
Loggerhead shrike				X	
Baird's sparrow					X
Western yellow bat					X
Western red bat					X
Townsend's big-eared bat					X
Spotted bat				X	
Southwest cave myotis	Former C2 Candidate Species				
Occult little brown bat				X	
California leaf-nosed bat				X	
Lesser long-nosed bat	X				X
Mexican long-tongued bat				X	X
Greater western mastiff bat	Former C2 Candidate Species				
Yellow-nosed cotton rat	Former C2 Candidate Species				
Aravaipa sage				X	

Wilderness: The Redfield Canyon Wilderness was designated by Congress as part of the Arizona Desert Wilderness Act of 1990. Due to remoteness, ruggedness, no public facilities, or designated parking, the area has experienced relatively few wilderness infractions.

A portion of the Muleshoe grazing allotment (No. 4401) is located within the Redfield Canyon Wilderness. Livestock grazing was in suspension at the time of wilderness designation, and has remained in suspended nonuse since then. In addition, the Forest Service retired livestock grazing on the adjacent Galiuro Wilderness in 1986.

The Galiuro Wilderness was designated by Congress in 1964 and was enlarged in 1984.

Approximately 76,317 acres of land are located within the Galiuro Wilderness.

In Wilderness Areas, fish will be transported by foot and backpack. The establishment of native endangered fish will not violate any wilderness regulations.

Livestock Grazing: The Nature Conservancy has not grazed the Muleshoe Ranch since they acquired it in 1982. In September 1987, the Record of Decision for the Eastern Arizona Grazing Environmental Impact Statement proposed placing the active grazing preference of 4,032 AUMs (336 cattle yearlong on public lands) in the Muleshoe allotment (No. 4401) into a five-year suspension effective upon signing of a cooperative management agreement. The purpose of the livestock grazing suspension was to promote recovery of the riparian areas and to enhance important wildlife habitat and watershed conditions. The BLM, TNC, and FS implemented this suspension in 1988 through approval of the Muleshoe Cooperative Management Agreement.

There are three BLM grazing allotments within the Muleshoe planning area, Muleshoe Allotment (No. 4401), Soza Mesa Allotment (No. 4402), and Soza Wash Allotment (No. 4409). The Muleshoe allotment includes the Hot Springs ACEC and the majority of the Redfield Canyon Wilderness. The Soza Mesa allotment is west of the Muleshoe allotment, and the Soza Wash allotment is at the western edge of the Redfield Canyon Wilderness, near the confluence of Redfield and Swamp Spring canyons.

Recreation: The Muleshoe Ecosystem is used throughout the year by a variety of outdoor enthusiasts who engage in hunting, hiking, horseback riding, birding, wildlife observation, and primitive camping. Recreational activity is dispersed, although hiking, birding, and wildlife viewing is often concentrated near TNC headquarters due to developed sites that include a campground, casitas, and nature and hiking trails.

The riparian area of Hot Springs Canyon (140 acres) has been closed to off-highway vehicle use. Motorized vehicles are allowed on existing roads and trails within the Muleshoe Cooperative Management Area (CMA). However, the amount of use is limited due to rugged terrain and remoteness of the area.

Prescribed Fire: The proposed action includes burning within riparian zones only if fuel loads indicate a possibility of loss due to catastrophic fire. The fire prescription is expected to be a cool-season, low-burning ground fire, with very short flame length (one to one and one-half feet), and strip burning techniques to reduce the risk of uncontrolled burning at the stream edge. Any fire, natural or prescribed, that burns out of prescription would be immediately suppressed. Fire would be carefully administered and not allowed to run parallel to watercourses. Prescribed fires include using prescribed fire units (both natural and ignited) on an experimental basis in riparian areas and pre-and-post burn monitoring by BLM and TNC.

The environmental impacts of the prescribed burns on BLM administered lands are evaluated in EA-AZ-060-98-004.

Landownership/Private Property Rights: The proposed project area includes private land and public

lands owned and managed by BLM, TNC, USFS, and affected landowners downstream of Hot Springs, Redfield, and Cherry Springs canyons. The Arizona Chapter of the Nature Conservancy and the Forest Service are cooperators with the proposed project.

ENVIRONMENTAL IMPACTS

Determine Scope of the Assessment: This project was proposed as a recovery effort for Gila topminnow and desert pupfish, federally listed as endangered; loach minnow and spikedace, federally listed as threatened; lowland leopard frog, wildlife of special concern; longfin dace, speckled dace, Sonora sucker, and desert sucker, sensitive species. The proposed action is listed as a fish and wildlife objective in the Muleshoe Ecosystem Management Plan. In addition, this project supports the interagency Memorandum of Understanding (MOU) that was signed in 1996 to establish populations of Gila topminnow and desert pupfish on BLM lands in Arizona. Participating agencies are BLM, Service, TNC, AGFD, ASU, BOR, ASLD, and USFS.

Project Scoping occurred at proposed action sites where representatives of Bureau of Land Management, United States Fish and Wildlife Service, Bureau of Reclamation, Arizona Game and Fish Department, the Arizona Chapter of the Nature Conservancy, and Arizona State University were present on four different occasions (September 02, 2003; December 23, 2003; January 16, 2004; February 23, 2004; May 04, 2004) for site visits.

Issues Identified:

Preliminary Issues:

1. Habitat suitability potential within the three watersheds for native fish reestablishment and augmentation within historical range.
2. Transfer of fish parasites, pathogens, and invasive aquatic plant species.
3. Landownership and private property rights.
4. Consequences of having ESA listed fish (desert pupfish, Gila topminnow, loach minnow, and spikedace,) present when considering other actions, including prescribed burns and livestock grazing.
5. Potential of nonnative fish escaping from Redus Tank and entering Hot Springs canyon via Bass canyon during a precipitation event. Redus tank is located on state land.

In order for a preliminary issue to be considered as a key issue and therefore considered in formulating alternatives, it must meet one of the following criteria: 1) Be within the scope of the proposed action, 2) Not already be decided/required by law, regulation, or other previous decisions, 3) Be relevant to the decision being made, 4) Not be distinctly limited in extent, duration, and intensity, and 5) Be supported by scientific evidence.

Non-significant Issues:

1. Likelihood of successfully establishing viable populations of desert pupfish, Gila topminnow, loach minnow, spikedace, Gila chub, longfin dace, speckled dace, Sonora

sucker, desert sucker, and lowland leopard frog. This does not qualify as a NEPA issue but rather is an evaluation criterion by which to evaluate each alternative. However, all proposed streams support populations of native fish and frogs except for Cherry Springs which currently is fishless.

Key Issues: The key issues identified through scoping were used to develop alternatives for this project.

1. Landownership and private property rights.

The landowners that may be affected by the proposed action include the following individuals and or groups: Andy and Stephanie Smallhouse and Saguaro-Juniper Association.

Critical Elements:

The proposed action or alternatives would not affect the following critical elements (Table 2) and these elements will not be carried forward for analysis: air quality, cultural resources, environmental justice/socioeconomics, flood plains, hazardous materials, threatened and endangered (T&E) plants, wild and scenic rivers, native American religion, prime/unique farmland, solid waste, visual resource management (VRM), water quality, and wetland/riparian.

Table 2. Critical Elements Analyzed for this Project.

CRITICAL ELEMENTS (required by federal law)	AFFECTED		CRITICAL ELEMENTS (required by federal law)	AFFECTED	
	YES	NO		YES	NO
Air Quality		X	Native American Religion		X
Cultural Resources		X	Prime/Unique Farmland		X
Environmental Justice / Socioeconomics		X	Solid Waste		X

Table 2 Continued. Critical Elements Analyzed for this Project.

Flood Plains		X	Visual Resource Management		X
Hazardous Materials		X	Water Quality		X
Threatened and Endangered Plants		X	Wetland/Riparian		X
Wild and Scenic Rivers		X			

The following critical elements may be affected (positively or negatively) in the proposed action or alternatives, and these elements are carried forward for analysis: area of critical environmental concern (ACEC), wilderness, threatened and endangered (T&E) animals, and invasive/noxious plants. Other issues for this proposed project were evaluated including livestock grazing, recreation, prescribed fire, and landownership/private property rights.

Table 3. Critical Elements Carried Forward for Analysis.

CRITICAL ELEMENTS (required by federal law)	AFFECTED		CRITICAL ELEMENTS (required by federal law)	AFFECTED	
	YES	NO		YES	NO
Area of Critical Environmental Concern (ACEC)	X		Threatened and Endangered (T&E) Animals	X	
Wilderness	X		Invasive/Noxious Plants	X	

Impacts of the Proposed Action:

IMPACTS TO SPECIAL DESIGNATION AREAS FROM PROPOSED ACTION:

ACECs: The proposed action is expected to bring about positive affects to the Hot Springs ACEC. The ACEC was designated to protect riparian, cultural, fish, and wildlife values including threatened and endangered species. The establishment of desert pupfish, Gila topminnow, loach minnow, and spikedace; as well as augmentations within historical habitats for Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog will increase biological diversity, richness, and aesthetics of this ACEC.

Wilderness: The proposed action will increase the biodiversity, scientific, and research values of the Muleshoe Ecosystem. Fish and frog stockings will not violate any of the wilderness regulations. The recovery plans for spikedace and loach minnow specifically mention Redfield Canyon as a potential reintroduction (stocking) site. Because many of these fishes became rare before thorough surveys were conducted, their historical presence at many locations, especially less noteworthy streams, is unknown. However, because these species are found in larger or more prominent waters within the same drainage basin, reestablishment anywhere in that drainage where natural dispersal can occur is biologically sound.

IMPACTS TO THREATENED AND ENDANGERED ANIMALS FROM PROPOSED ACTION:

T&E Animals: The proposed action is expected to result in the establishment of at least three populations each of desert pupfish, Gila topminnow, loach minnow, and spikedace; as well as augmentations within historical habitats for Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog. The establishment of these new populations of endangered, threatened, wildlife of special concern, and sensitive fish and frog species would contribute significantly toward their recovery as well as increase the biological diversity and richness of the Muleshoe Ecosystem.

Hot Springs Canyon supports five native fish species, Gila chub, longfin dace, speckled dace, Sonora sucker, and desert sucker; whereas, Redfield Canyon supports four species of native fish, Gila chub, longfin dace, speckled dace, and Sonora sucker. The stocking and establishment of desert pupfish, Gila topminnow, loach minnow, and spikedace into Redfield Canyon and/or Hot Springs Canyon will result in species interactions that will likely include predator/prey, competition for

breeding grounds, territory protection, spawn protection, alteration of food web dynamics which would include eating food items that another species prefers, modification of nutrient cycling, and opportunistic feeding by resident species and stocked species. These interactions which are based on abiotic and biotic parameters would be negligible. In communities where these species overlap and co-exist interactions have been minimal.

The proposed action will not affect any threatened and/or endangered animals in Cherry Springs. Cherry Springs is fishless, however, lowland leopard frog eggs, tadpoles and adults; along with aquatic invertebrates are present throughout the wetted portions and indicate habitat suitable for fish.

Desert pupfish, Gila topminnow, loach minnow, spikedace are expected to co-exist with Gila chub, longfin dace, speckled dace, Sonora sucker, and desert sucker, already present in Hot Springs Canyon and with Gila chub, Sonora sucker, longfin dace, and speckled dace in Redfield Canyon. Augmentations for Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog, within historical range in Redfield and Hot Springs canyons will be a proactive conservation measure for these species to aid them before they become imperiled and federally listed.

Some desert pupfish, Gila topminnow, spikedace, and loach minnow, are likely to move passively or actively downstream of the Muleshoe Preserve boundary in Redfield, Hot Springs, and Cherry Springs canyons, particularly during periods of high runoff. The persistence of desert pupfish, Gila topminnow, spikedace, and loach minnow downstream of the Muleshoe Preserve boundary is not known, but conditions are not likely to support a large permanent population of these species, due to the lack of perennial flows. Should individuals of these species be washed downstream as far as the San Pedro River, predation and/or competition with nonnative fish, frogs, and crayfish in the San Pedro River is likely to eliminate them.

IMPACTS TO LIVESTOCK GRAZING FROM PROPOSED ACTION:

Livestock Grazing: The continuation of livestock grazing under the existing management system is consistent with the proposed action. The terms and conditions pertinent to livestock grazing in the Service's Biological Opinion reflect the levels of allowable and current use under the existing grazing strategy. Therefore, the proposed action will have no effect on the existing or foreseeable future operations.

IMPACTS TO RECREATION FROM PROPOSED ACTION:

Recreation: Recreational use is light and dispersed in the vicinity of the proposed project areas, and is generally associated with equestrian use, hiking, and hunting. Recreation opportunities will not be affected by the proposed action.

IMPACTS TO PRESCRIBED FIRE FROM PROPOSED ACTION:

Prescribed Fire: The proposed action is consistent with fire management plans for the project area as

evaluated in the environmental impacts of the prescribed burns on BLM-administered lands in EA # AZ-060-98-004.

IMPACTS TO LANDOWNERSHIP/PRIVATE PROPERTY RIGHTS FROM PROPOSED ACTION:

Landownership/Private Property Rights: Part of the proposed project area is located within private lands owned and managed by TNC. The Arizona Chapter of the Nature Conservancy is a cooperator for this proposed project and they look forward to re-establishing and augmenting populations of native fish on lands they own and manage.

Private landowners downstream of the proposed project area own and manage segments of Redfield, Cherry Springs, and Hot Springs Canyons. It is anticipated that they will not be affected by the proposed action due to limited suitable aquatic habitat (*i.e.*, no water or type of habitat present). The majority of perennial flow and suitable aquatic and riparian habitat exists on lands owned and managed by BLM and TNC. If fish move actively or passively onto private lands with less suitable habitat or into ephemeral habitats they will likely not persist.

Cumulative Impacts From Proposed Action:

Past Action:

1. An unsuccessful attempt was made in February 1994 to reintroduce Gould's turkey to woodland habitat on the FS lands in the Galiuro mountains.
2. In January and February 1997, an additional 46 turkeys were released in the Galiuro mountains in eight separate release events.
3. November 29, 1980 through November 14-16, 1988, multiple desert bighorn sheep releases were done at sites on the Muleshoe ecosystem. Overall success was low.
4. Fencing was constructed to separate the Soza Mesa and Muleshoe Allotments.
5. Developed sites: The facilities at the Muleshoe's Ranch headquarters include a campground, casitas, and nature and hiking trails. In addition, a primitive cabin is maintained at Pride Ranch by TNC; whereas, the FS maintains Jackson cabin for recreationists.

Proposed Action:

1. Stock endangered desert pupfish, endangered Gila topminnow, threatened loach minnow, and threatened spikedace in watersheds within the Muleshoe Ecosystem.
2. Augment federally proposed as endangered Gila chub, Wildlife of Special Concern, lowland leopard frog, and four BLM sensitive species, longfin dace, speckled dace, Sonora sucker, and desert sucker populations in watersheds within the Muleshoe Ecosystem.

Future Action:

1. Construct a fish barrier in Redfield canyon on state lands in the NW ¼ of Section 36 to prevent nonnative fish species from moving upstream from the San Pedro River. Fish barrier construction is a Bureau of Reclamation funded project that resulted from the Central Arizona Project (CAP) opinion. The opinion addresses impacts to aquatic species for barrier construction (USFWS, 2001).
2. Construct a fish barrier in Hot Springs canyon on BLM lands in the SW ¼ of Section 32 to prevent nonnative fish species from moving upstream from the San Pedro River. Fish barrier construction is a Bureau of Reclamation funded project that resulted from the Central Arizona Project (CAP) opinion. The opinion addresses impacts to aquatic species for barrier construction (USFWS, 2001).
3. Augment, survey, and monitor populations of desert pupfish, Gila topminnow, loach minnow, spikedace, Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog. If populations fail to become established or are eliminated due to drought, flooding, or other environmental factors after stocking, it will be necessary to augment the populations. Annual surveys to monitor the presence/absence, health, distribution, and success of stocking efforts will be conducted.

Areas of Critical Environmental Concern (ACEC): The Hot Springs ACEC was designated because it contains valuable riparian vegetation communities and populations of five native fish species. The BLM recognizes the significant value of the area and intends to implement management actions to protect and enhance the resource values. The future action of constructing a fish barrier in Hot Springs Canyon will provide additional protection to aquatic, riparian, and fish values, including threatened and endangered species.

Threatened and Endangered (T&E) Animals: The construction of a barrier in Redfield canyon and Hot Springs canyon will effectively protect both streams from nonnative aquatic species moving upstream from the San Pedro River during high flow events. Currently, no nonnative fish, frog, or crayfish species inhabit Redfield or Cherry Springs canyons at potential stocking or augmentation sites. The likelihood of these two watersheds remaining free of nonnatives is highly unlikely, as both terminate at the San Pedro River, which contains nonnative competitive and predatory fish, crayfish, and frogs.

Livestock Grazing: These future actions, if implemented, will have no cumulative effects on current and proposed authorized livestock grazing activities in the project area.

Recreation: These future actions, if implemented, will provide recreationists visiting the Muleshoe Ecosystem the unique opportunity of viewing rare endangered and threatened native fish in the project area. This action will likely add to their experience.

Prescribed Fire: These future actions, if implemented, will have no cumulative effects on future authorized prescribed fires in the project area.

Landownership/Private Property Rights: These future actions, if implemented, will have no

cumulative effects on land ownership and private property rights in the project area.

RESIDUAL IMPACTS

Proposed Action: Residual impacts of the proposed action would include the establishment of at least three populations each of desert pupfish, Gila topminnow, loach minnow, spikedace, Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog on public and private lands. Populations of desert pupfish, Gila topminnow, loach minnow, and spikedace would be fully protected by the Endangered Species Act. The successful implementation of the proposed action may set a precedent for the future reestablishment of endangered fish in additional sites where their presence, management, and conservation does not preclude nor unacceptably restrict other resource uses of the public lands. This action may contribute to the eventual conservation and recovery of these two species of endangered fish, desert pupfish and Gila topminnow, and two species of threatened fish, loach minnow and spikedace.

Impacts of the No Action Alternative:

The following elements of the human environment have been analyzed and will not be affected by this alternative: Air Quality, Cultural Resources, Environmental Justice/Socioeconomics, Flood Plains, Hazardous Materials, Invasive/Noxious Plants, Native American Religion, Prime/Unique Farmland, Solid Waste, Visual Resource Management (VRM), Water Quality, Wild and Scenic Rivers, Threatened or Endangered (T&E) Animals, Threatened or Endangered (T&E) Plants, Wetland/Riparian, Livestock Grazing, Recreation, Prescribed Fire, and Land Ownership/Private Property Rights.

IMPACTS TO SPECIAL DESIGNATION AREAS FROM NO ACTION ALTERNATIVE:

Areas of Critical Environmental Concern (ACEC): New populations of desert pupfish, Gila topminnow, loach minnow, and spikedace would not be established. Augmentations within historical habitats for Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog would not occur and the resulting increase in biodiversity, aesthetic, scientific, and research values within the Muleshoe Ecosystem would not occur.

Wilderness: New populations of desert pupfish, Gila topminnow, loach minnow, and spikedace would not be established and augmentations within historical habitats for Gila chub, longfin dace, speckled dace, Sonora sucker, and desert sucker, and lowland leopard frogs would not happen; the resulting increase in biodiversity, aesthetic, scientific, and research values within the Redfield Canyon Wilderness Area would not occur.

IMPACTS TO THREATENED AND ENDANGERED (T&E) ANIMALS FROM NO ACTION ALTERNATIVE:

Threatened and Endangered (T&E) Animals: Under this alternative, the opportunity to further conservation and recovery of endangered Gila topminnow and desert pupfish and threatened loach minnow and spikedace, by establishing additional self-sustaining populations of these species would be missed; nor would augmentations within historical habitats for federally proposed as endangered Gila chub, BLM sensitive species, longfin dace, speckled dace, Sonora sucker, desert sucker, and

wildlife of special concern, lowland leopard frog occur.

IMPACTS TO LIVESTOCK GRAZING FROM NO ACTION ALTERNATIVE:

Livestock Grazing:

There would be no effect to livestock grazing under this alternative.

IMPACTS TO RECREATION FROM NO ACTION ALTERNATIVE:

Recreation:

The opportunity to see native fishes in native habitat lost, opportunity to know that they are there is also lost.

IMPACTS TO PRESCRIBED FIRE FROM NO ACTION ALTERNATIVE:

Prescribed Fire:

There would be no effect to prescribed fire under this alternative. The fire management plan for this area would remain the same.

IMPACTS TO LANDOWNERSHIP/PRIVATE PROPERTY RIGHTS FROM NO ACTION ALTERNATIVE:

There would be no effect to landownership/private property rights under this alternative.

Cumulative Impacts From the No Action Alternative:

No Action Alternative:

There will be no impact beyond those already in place if the no action alternative is chosen.

RESIDUAL IMPACTS

No Action Alternative: Residual impacts of the no action alternative would be that the status of the desert pupfish, Gila topminnow, loach minnow, spikedace, Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog would not improve. Additionally, multiple use activities that affect remaining desert pupfish, Gila topminnow, loach minnow, and spikedace populations are likely to become increasingly restricted as the status of existing populations continue to decline. Such restrictions have resulted in “jeopardy” Biological Opinions issued by the USFWS concerning other endangered species that have declined precipitously close to extinction.

Impacts of Alternative A:

IMPACTS TO SPECIAL DESIGNATION AREAS FROM ALTERNATIVE A:

ACECs: Alternative A is expected to produce positive impacts to the Hot Springs Area of Critical Environmental Concern. The ACEC was designated to protect riparian, cultural, fish, and wildlife values including threatened and endangered species. The establishment of desert pupfish, Gila topminnow, loach minnow, and spikedace; as well as augmentations within historical habitats for Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog will increase biological diversity, richness, and aesthetics of this ACEC.

Wilderness: If Alternative A is selected, no net value to native fish or frogs would occur in a wilderness area. The biodiversity, scientific, and research values of the Muleshoe Ranch wilderness area in Redfield Canyon would not increase.

IMPACTS TO THREATENED AND ENDANGERED ANIMALS FROM ALTERNATIVE A:

T&E Animals: Alternative A is expected to result in the establishment of at least two populations of desert pupfish, Gila topminnow, loach minnow, and spikedace; as well as augmentations within historical habitats for Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog. The establishment of these new populations would contribute significantly toward the conservation and recovery of these endangered, threatened, wildlife of special concern, and sensitive fish and frog species as well as the biological diversity and richness of the Muleshoe Ecosystem.

Hot Springs canyon supports five native fish species, Gila chub, longfin dace, speckled dace, Sonora sucker, and desert sucker. The stocking and establishment of desert pupfish, Gila topminnow, loach minnow, and spikedace into Hot Springs and Cherry Springs canyons will result in species interactions that will likely include predator/prey, competition for breeding grounds, territory protection, spawn protection, alteration of food web dynamics which would include eating food items that another species prefers, modification of nutrient cycling, and opportunistic feeding by resident species and stocked species. These interactions, which are based on abiotic and biotic parameters would be negligible. In communities where these species do overlap and co-exist interactions have been minimal.

The proposed action will not affect any threatened and/or endangered animals in Cherry Springs. Cherry Springs is fishless, however, lowland leopard frogs and aquatic invertebrates are present throughout the wetted portions and indicate habitat suitable for fish. Native fish species co-exist with lowland leopard frog populations throughout the Gila River basin with no measurable impact to either species.

Desert pupfish, Gila topminnow, loach minnow, and spikedace, and are expected to co-exist with Gila chub, longfin dace, speckled dace, Sonora sucker, and desert sucker, already present in Hot Springs Canyon. Augmentations for Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog, within historical habitats in Hot Springs canyon, will be a proactive measure for these species to aid them before they become imperiled.

IMPACTS TO LIVESTOCK GRAZING FROM ALTERNATIVE A:

Livestock Grazing: The continuation of livestock grazing under the existing management system is

consistent with the proposed action. The terms and conditions, pertinent to livestock grazing, included in the Biological Opinion from the USFWS reflect the levels of allowable and current use under the existing grazing strategy. Therefore, the proposed action will have no effect on the existing or foreseeable future operations.

IMPACTS TO RECREATION FROM ALTERNATIVE A:

Recreation: Recreational use is light and dispersed in the vicinity of the proposed project areas, and is generally associated with equestrian use, hiking, and hunting. Recreational opportunities will not be affected by the proposed action. In Redfield Canyon recreationists will not be able to observe threatened and endangered native fish species. The opportunity to observe rare or unique fish is priceless and would likely add to the experience.

IMPACTS TO PRESCRIBED FIRE FROM ALTERNATIVE A:

Prescribed Fire: The proposed action is consistent with fire management plans for the project area as evaluated in the environmental impacts of the prescribed burns on BLM-administered lands in EA # AZ-060-98-004.

IMPACTS TO LANDOWNERSHIP/PRIVATE PROPERTY RIGHTS FROM ALTERNATIVE A:

Landownership/Private Property Rights: Part of the proposed project area is within private lands owned and managed by TNC. If Alternative A is implemented, desert pupfish, Gila topminnow, loach minnow, and spokedace would not have the opportunity to disperse either actively or passively downstream onto private land. However, Redfield canyon currently supports four species of native fish that have the opportunity to disperse during wetted periods. Currently, the ability of native fish to disperse onto private lands from Redfield and Hot Springs canyons has not been an issue to private landowners due to limited suitable habitat existing downstream.

Cumulative Impacts From Alternative A:

Past Action:

1. An unsuccessful attempt was made in February 1994 to reintroduce Gould's turkey to woodland habitat on the FS lands in the Galiuro mountains.
2. In January and February 1997, an additional 46 turkeys were released in the Galiuro mountains in eight separate release events.
3. November 29, 1980 through November 14-16, 1988, multiple desert bighorn sheep releases were done at sites on the Muleshoe ecosystem. Overall success was low.
4. Fencing was constructed to separate the Soza Mesa and Muleshoe Allotments.
5. Developed sites: The facilities at the Muleshoe's Ranch headquarters include a

campground, casitas, and a nature and hiking trail. In addition, a primitive cabin is maintained at Pride Ranch by TNC; whereas, the FS maintains Jackson cabin for recreationists.

Proposed Action:

1. Stock endangered desert pupfish, endangered Gila topminnow, threatened loach minnow, and threatened spikedace in watersheds within the Muleshoe Ecosystem.
2. Augment federally proposed as endangered Gila chub, Wildlife of Special Concern, lowland leopard frog, and four BLM sensitive species, longfin dace, speckled dace, Sonora sucker, and desert sucker populations in watersheds within the Muleshoe Ecosystem.

Future Action:

1. Construct a fish barrier in Redfield canyon on state lands in the NW ¼ of Section 36 to prevent nonnative fish species from moving upstream from the San Pedro River. Fish barrier construction is a Bureau of Reclamation funded project that resulted from the Central Arizona Project (CAP) opinion. The opinion addresses impacts to aquatic species for barrier construction (USFWS, 2001).
2. Construct a fish barrier in Hot Springs canyon on BLM lands in the SW ¼ of Section 32 to prevent nonnative fish species from moving upstream from the San Pedro River. Fish barrier construction is a Bureau of Reclamation funded project that resulted from the Central Arizona Project (CAP) opinion. The opinion addresses impacts to aquatic species for barrier construction (USFWS, 2001).
3. Augment, survey, and monitor populations of desert pupfish, Gila topminnow, loach minnow, spikedace, Gila chub, longfin dace, speckled dace, Sonora sucker, desert sucker, and lowland leopard frog. If populations fail to become established or are eliminated due to drought, flooding, or other environmental factors after stocking, it will be necessary to augment the populations. Annual surveys to monitor the presence/absence, health, distribution, and success of stocking efforts will be conducted.

Areas of Critical Environmental Concern (ACEC): The Hot Springs ACEC was designated because it contains valuable riparian vegetation communities and populations of five native fish species. The BLM recognizes the significant value of the area and intends to implement management actions to protect and enhance the resource values. The future action of constructing a fish barrier in Hot Springs Canyon will provide additional protection to riparian and fish values, including threatened and endangered species.

Threatened and Endangered (T&E) Animals: The construction of a barrier in Hot Springs Canyon will effectively protect the stream from nonnative predatory and competitive fish, frog, and crayfish species moving upstream from the San Pedro River during high flow events.

Livestock Grazing: These future actions, if implemented, will have no cumulative effects on current and proposed authorized livestock grazing activities in the project area.

Recreation: These future actions, if implemented, will have no cumulative effects on recreation activities in the project area.

Prescribed Fire: These future actions, if implemented, will have no cumulative effects on future authorized prescribed fires in the project area.

Landownership/Private Property Rights: These future actions, if implemented, will have no cumulative effects on land ownership and private property rights in the project area.

MITIGATING MEASURES

Mitigation measures are recommended actions to reduce, avoid or offset the potential adverse environmental consequences of an action. The following measures would be implemented for the project:

1. The BLM shall monitor incidental take resulting from the proposed action and report to the FWS the findings of that monitoring.
 - a. BLM shall monitor the project area that could be affected by the proposed action to ascertain take of individuals of the species and/or streambank and channel degradation that could cause harm or harassment to the species. The monitoring will be accomplished in tandem with the annual monitoring described in the proposed action for use in determining the status of stocked populations of these species. Monitoring will include, at a minimum, an assessment of any streambank damage that has occurred over the past year along wetted portions of the channel currently supporting stocked fish species. Special emphasis should be placed at any road or trail crossings of the streams at these sites.
 - b. BLM shall submit annual monitoring reports to the Arizona ecological Services Office by March 15 of each year beginning in year two of project implementation. These reports shall briefly document for the previous calendar year the effectiveness of the terms and conditions and locations of listed species observed. The report shall make recommendations for modifying or refining these terms and conditions to enhance listed species protection or reduce needless hardship on the BLM.
2. The BLM shall post a sign at the trailhead near the TNC headquarters advising recreationists of the presence of threatened and endangered fish in the streams and requesting that they cross streams only as necessary and minimize damage along stream corridors.
3. BLM shall provide public information and education pertaining to Arizona's native fish

and amphibians, reasons for their decline, and conservation and management tools currently being used to recover them.

4. BLM shall take no action that would result in increased grazing pressure at the proposed project sites.
5. BLM shall not allow salting within a ¼ mile of water, riparian areas, stream channels, areas of high erosion potential, or projects.
6. BLM shall conduct prescribed burns in a manner that will impact less than ½ of the watershed of any stocking site in any two-year period.

RESIDUAL IMPACTS

Alternative A: Residual impacts of Alternative A would be that the net positive effect of stocking fish and frogs into three watersheds would not occur.

CONSULTATION AND COORDINATION

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APPENDIX 1. COMMON AND SCIENTIFIC NAMES OF WILDLIFE AND PLANTS USED IN THE ENVIRONMENTAL ASSESSMENT.

<u>Common Name</u>	<u>Scientific Name</u>
Desert pupfish	<i>Cyprinodon macularius macularius</i>
Gila topminnow	<i>Poeciliopsis occidentalis occidentalis</i>
Loach minnow	<i>Tiaroga cobitis</i>
Spikedace	<i>Meda fulgida</i>
Gila chub	<i>Gila intermedia</i>
Longfin dace	<i>Agosia chrysogaster</i>
Speckled dace	<i>Rhinichthys osculus</i>
Sonora sucker	<i>Catostomus insignis</i>
Desert sucker	<i>Pantosteus clarki</i>
Lowland leopard frog	<i>Rana yavapaiensis</i>
Mexican garter snake	<i>Thamnophis eques</i>
Canyon spotted whiptail	<i>Cnemidophorus burti</i>
Desert tortoise	<i>Gopherus agassizii</i>
Texas horned lizard	<i>Phrynosoma cornutum</i>
Common black-hawk	<i>Buteogallus anthracinus</i>
Northern gray hawk	<i>Buteo nitidus maximus</i>
Peregrine falcon	<i>Falco peregrinus</i>
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>
Mexican spotted owl	<i>Strix occidentalis mexicanus</i>
Southwestern willow flycatcher	<i>Empidonax trailli extimus</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Baird's sparrow	<i>Ammodramus bairdii</i>
Western yellow bat	<i>Lasiurus xanthinus</i>
Western red bat	<i>Lasiurus blossevillii</i>
Townsend's big eared bat	<i>Plecotis townsendii</i>
Spotted bat	<i>Euderma maculatum</i>
Southwest cave myotis	<i>Myotis velifer brevis</i>
Occult little brown bat	<i>Myotis lucifugus occultus</i>
California leaf-nosed bat	<i>Macrotus californicus</i>
Lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuenae</i>
Mexican long-tongued bat	<i>Choeronycteris mexicana</i>
Greater western mastiff bat	<i>Eumops perotis californicus</i>
Yellow-nosed cotton rat	<i>Sigmodon ochrognathus</i>
Aravaipa sage	<i>Salvia amissa</i>
Bullfrog	<i>Rana catesbeiana</i>
Crayfish	<i>Orconectes virilis</i>
Tiger salamanders	<i>Ambysoma tigrinum mavortium</i>
Bass and sunfish (Centrarchidae)	<i>Micropterus and Lepomis</i>
Arizona alder	<i>Alnus oblongifolia</i>
Arizona walnut	<i>Juglans major</i>
Arizona sycamore	<i>Planatus wrightii</i>
canyon tree frogs	<i>Hyla arenicolor</i>
cottonwood	<i>Populus fremontii</i>
deer grass	<i>Muhlenbergia rigens</i>
Gooding's willow	<i>Salix gooddingii</i>
Seep willow	<i>Baccharis glutinosa</i>
Willow spp.	<i>Salix spp.</i>
Mesquite spp.	<i>Prosopis spp.</i>

APPENDIX 1 CONTINUED. COMMON AND SCIENTIFIC NAMES OF WILDLIFE AND PLANTS USED IN THE

ENVIRONMENTAL ASSESSMENT.

Sedges	<i>Carex</i> spp.
Rushes	<i>Juncus</i> spp.
velvet ash	<i>Fraxinus velutina</i>
Wild rye	<i>Elymus canadensis</i>

Streams and Land Ownership in the Proposed Action Area

