

**Gila River Basin Native Fish Conservation Program  
Policy Committee Meeting  
Thursday, June 16, 2022 \*2PM – 4PM (AZT)**

***DRAFT MEETING NOTES***

**Meeting Objectives**

- Review work completed by the Program in the last year
- Finalize recommendations for the FY23 Work Plan
- Provide relevant updates on projects, contracts and species' recoveries
- Review and discuss Strategic Plan

**GRBNFCP update – see [Bill's presentation \(attached\)](#)**

**Program Status Update – Strategic Plan Goals**

Scientific Foundation

**Goal #1:** investigate novel methods to control non-native aquatic biota

- yy male investigations run by the University of Arizona under Dr. Scott Boehner - Chad Teal is the PhD student working on this and he's defending in December, this has been a five year project.
  - develop a brood of yy Red Shire further conversation about what to do with those fish when he's when he's done.
  - With the green sunfish, there's been some challenges – particularly in developing the second genetic marker
  - Chad has three publications out and another one in press right now
    - [Bill to send publications to the group](#)
  - Also presenting at American Fisheries Society conference this summer
- Movable barrier
  - working with our Technical Services Center to look at sort of temporary barriers that are somewhere in between, you know, our permanent concrete barriers and, and a net and one of the things that they identified was this water gate system, and they tested it out some streams in Colorado and Wyoming and we now actually have in our, our warehouse.
  - customize the size, the length of it, the height of it
    - Allow for treatments and/or mechanical removals once set up
  - BOR's is 100lbs – portable with a cart
  - Vary in prices
  - Summer 2022 work with this on the West Fork of the Black River to see how it works on the ground

**Goal #2:** assemble existing knowledge of life history needs

- One ongoing project is with New Mexico State University, where they're looking at Gila Chub habitat, primarily focused on the San Francisco River in New Mexico
  - study was to identify which habitat variables play an important role in either chub abundance then ideally recommend some locations where they're suitable habitat for potential future repatriation

**Goal #3:** improve propagation techniques for spinedace and loach minnow

- Staff at ARCC are continuing to look at propagating spinedace at different densities
- Additionally they are looking at ways of increasing production by 25% from the previous 5-yr period
- renovation help provide additional spawning raceways so that's been a real positive

**Goal #4:** to develop genetic management plans for the priority species

- Funded genetic studies of gila topminnow and spikedace
- At the ASU facility it was discovered that one lineage was a hybrid (accidental mixing) – then destroyed
- Adjusting stocking practices in combination with genetic management plans may be more helpful
- Effort will now be led by USFWS, Steve Mussman and Wade Wilson
  - BOR will be reaching out to get started working on a genetic management plan
    - Monthly meetings with AGFD, BOR and USFWS, if anyone from New Mexico would like to be involved

**Goal #5: Investigate new stocking strategies to improve survival of repatriated fish**

- Kansas State University put tagged fish into streams to assess dispersal – how far downstream are they going, are they going over barriers?
  - Most recent stocking in March 2022
  - Hope to have results by the December Technical Committee meeting
- For the razorback sucker – the study is comparing the stocking of different size classes in the reservoir (~1050 fish) and upstream (~1050 fish)
  - Pit tag readers in the reservoir and a subset of fish in the were tagged
  - Objectives are to look at the survival of the two different stocking locations, seasonal movement, habitat preference, and really kind of focusing it on just kind of the normal operations that SRP does for that reservoir – draining, or near draining and how the effects on fish.
    - Some preliminary results indicate fish movement down into the reservoir and some still up in the river.

Preventing Extinction and Managing Toward Recovery

**Goal #1:** Identify critical streams and populations in need of protection and potential repatriation (see list in pdf)

- Those listed are being investigated (in any form: suitability for stocking, if removal is happening, stock tank inventory etc.)

**Goal #2:** Maintain and operate ASU holding facility for top minnow and ARCC to support program recovery efforts

- ASU has been decommissioned
- ARCC currently holding:
  - 3 populations of spikedace, continue holding for genetics work
  - 5 populations of loach minnow
    - Some from the Bear Creek fire area and may need more discussion about holding until habitat recovers – need to revisit Bear Creek to assess status
  - Additional lineages from the San Francisco River, the Blue and the Gila Forks population – there was some mixing of lineages resulting in the need from them to be destroyed
  - Some Parker Canyon top minnow and Eagle Creek chub

**Goal #3:** Protect native fish populations from non-native fish

- This goal is primarily geared towards fish barriers and will be covered in the updates

**Goal #4:** Remove non-native aquatic species threats

- Sharp Spring update from B. Hickenson – rotenone treatments didn't get all the non-natives in the first runs and adjustments had to be made, now they are complete

**Goal #5:** Replicate populations and their associated native fish community into protected streams and other surface waters

- 4 stocking locations
- 15 post-stocking/monitoring locations

**Goal #6:** Acquire or work with other programs to acquire easement, land or water rights to protect key surface water

- Nothing to report this year

**Goal #7:** Protect, maintain and restore degraded aquatic habitats to use for native fish

- Nothing to report this year

**Goal #8:** Inform and educate the public

- K. Mosher to cover this in more depth

**Goal #9:** Monitor to quantitatively measure and evaluate project success in improving the status of target species and their habitats.

- Monitoring Plan was developed and completed in 2020
  - Marsh and Associates is the contractor
- Environmental DNA (eDNA) project with an agreement with the Forest Service
  - Send in samples for monitoring or confirming presence of species

**Goal #10:** Maintain accurate Program tracking records

- Programs of work, website, reports and publications

#### Strategic Plan Goals – Progress

- Green – goals met
- Yellow – in progress
- Red – not met

#### **FY23 Work Plan**

- Review of project proposals (see work plan) – changes below
  - Red Tank Draw (AGFD) was removed from the list this year to stay within the total budget number
  - Remote site inventory (NMDGF) paired with existing efforts on the San Francisco River and AGFD will work on the AZ side of the river.
- Recommendation
  - Support moving forward

#### **Updates**

- Fish barrier update – *Bill Stewart, BOR* add photos of barriers
  - **Bonita Creek** – there were beaver dams below the barrier that was backing water up onto the apron and there were a lot of cattails (since removed).
    - Added a fish screen, and will be monitoring to see how well it works
  - **Eagle Creek** – this would be a new barrier, there has been a delay in the NEPA and there are discussions with Freeport about the access agreement.
    - There would be a cost sharing agreement once this moves forward
    - Ideally constructions would start Fall 2023/Spring 2024
  - **Upper Verde** – monthly meetings with FWS, Prescott National Forest
    - 2 barriers would be located within a proposed Wild and Scenic River (suitability study in process) section of the Upper Verde River
    - Hoping to have decision in early 2023, this will be a Prescott National Forest decision.
      - Then assess barrier compatibility of the designation and move to the NEPA process
  - **Pleasanton Diversion** – would like to turn this into a more proper barrier, initial discussions only at this point

- **O'Donnell Creek** – still a consideration, but waiting on BLM and Audubon Research Ranch to indicate support
- Native fish monitoring – *Kent Mosher, BOR*
  - Long term monitoring started in the 1990s, initially focused on the canal, now the canal is monitored every 5 years, instead of every year.
  - Updates on the [website](#)
    - [Web application](#) for uploading survey information based on geographic location
  - 5-year contract ended in April, 2022; new contract awarded to Marsh and Associates and they have already begun surveying.
    - One notable find is green sunfish in Fresno Canyon, may be worth looking into
- ARCC renovation update
  - Cost estimate is more than anticipated and more than the BOR budget, given price estimates were taken years ago and current pricing is significantly more.
  - Looking into availability of state funds
  - Also waiting on engineering to determine where to break ground next at the facility
  - Funding from FWS is only available through the end of FY23, so lining out next steps and the timeline is important, especially if money needs to be deferred
    - Follow up conversation needed on this
- I&E update - *Kent Mosher, BOR (see attached PDF)*
  - **Field Guide**
  - **Sharing Tails**
    - CCAST Sharing Tails Webinar: <https://www.youtube.com/watch?v=ri3nJqanMsk>
    - Funding for this project is ending soon, may need to find other funding for it to continue
  - **Freshwaters Illustrated** – funding to USFS to develop short films on the Gila River Basin
    - Jeremy is out filming and may reach out regarding opportunities
  - **Native Fish in the Classroom** – focused on elementary school classrooms
    - USFS, Dustin Meyers from Silver City plans to continue the program there
    - This program may also discontinue without further funding
- ABQ-Biopark potential holding facility - *Bill Stewart, BOR and Jill Wick, NMDGF*
  - Additional propagation facility opportunity
  - Would be more convenient in terms of coordination with AZ and bringing fish over
  - This would require some initial set up costs, but for the long term may be beneficial
  - Currently holding Blue sucker and Zuni blue sucker for NM, and they are interested in other conservation projects
  - This could be worked into the new strategic plan
- Species Update – *Heather Whitlaw, USFWS*
  - **Gila Top Minnow** – 5-yr review is due in FY23, SSA is underway and moving forward. Many chapters are under review and then work will begin on the Future Conditions chapter. SSA team to meet in July.
  - **Desert Pupfish** – 5-yr review is scheduled for finalization in FY23
  - **Spikedace** – in review, 2019 Federal Register Notice was published and revised recovery criteria in the link below
  - **Loach minnow** – 5-yr review due in FY22 and revised recovery criteria also in the link below
  - **Gila chub** - published the Federal Register Notice on April fifth of this year, for a petition

finding on round tail chub, and in that document, we stated, we have determined that we should consider removing Gila chub from the protections of the act. Therefore, this document includes an advance notice of proposed rulemaking pertaining to removing gila chub currently listed as endangered from the list of endangered and threatened wildlife.

- Final Recovery updates can be found below:
  - Spikedace RP link - <https://ecos.fws.gov/ecp/species/6493#recovery>
  - Loach minnow RP link - <https://ecos.fws.gov/ecp/species/6922#recovery>
- AGFD Updates, *Julie Carter and Brian Hickerson*
  - **Westfork of the Black** - Planning rotenone for next year late May, early June with two phases:
    - First – headwaters to the barriers below FS Road 116. This is in collaboration with the White Mountain Apache Tribe. Internal planning and commission approval pending
    - Second - in FY24 the treatment would be from the barriers to the reclamations barrier (if the first portion does not need to be re-treated) – then re-stocking with FWS input on fish source(s)
    - Crews have been conducting dye tests and prep for moving forward
  - **Bear Wallow** – didn't have to renovate, there is Apache trout there and we have the ability to stock loach minnow
    - Source for fish is still uncertain, since there isn't currently a source for that drainage.
    - More conversations needed with the FWS species specialist to finalize

**Strategic Plan next steps**, *Bill Stewart, Bureau of Reclamation*

- Very first draft of the new strategic plan, based on the existing plan
- Language to address the perception of conflict of interest (during evaluation of upcoming projects)
- Follow up call with the Policy Committee after edits have been received to solidify changes.

**Participant List**

Bill Stewart	Bureau of Reclamation
Kent Mosher	Bureau of Reclamation
Heather Whitlaw	US Fish and Wildlife Services
Kirk Patten	New Mexico Department of Game and Fish
Jill Wick	New Mexico Department of Game and Fish
Julie Carter	Arizona Game and Fish Department
Brian Hickerson	Arizona Game and Fish Department
Scott Richardson	US Fish and Wildlife Services



## **Program Accomplishments**

# 5-Year Strategic Plan

## Scientific Foundation

1. Investigate novel methods to control nonnative aquatic biota
2. Update and assemble existing knowledge of life history needs and ecology of Gila River basin native fishes
3. Improve propagation techniques for spikedace and loach minnow
4. Develop genetic management plans for priority species
5. Investigate new stocking strategies to improve survival of repatriated fish.

GILA RIVER BASIN NATIVE FISHES CONSERVATION PROGRAM  
STRATEGIC PLAN 2018-2022  
April 2018

U.S. Fish and Wildlife Service  
U.S. Bureau of Reclamation  
New Mexico Game and Fish Department  
Arizona Game and Fish Department

### INTRODUCTION

This is the fourth 5-year strategic plan to assist the near-term implementation of the Gila River Basin Native Fishes Conservation Program (Program; previously known as the Central Arizona Project [CAP] Fund Transfer Program). The Program is funded by the U.S. Bureau of Reclamation (Reclamation), and is directed by the U.S. Fish and Wildlife Service (Service) and Reclamation, in cooperation with the New Mexico Department of Game and Fish (NMDGF) and Arizona Game and Fish Department (AZGFD). The Program mission is to undertake and support conservation actions (recovery and conservation) for federally listed, candidate and other non-listed fish species native to the Gila River basin by implementing existing and future recovery plans for those fishes. This strategic plan identifies the long-term vision for the Program as well as broad goals and actions that are expected to be accomplished by the Program over the next 5 years.

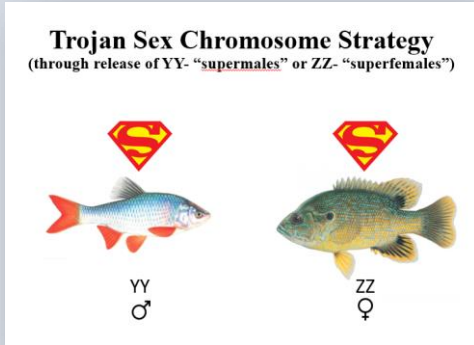
### DESCRIPTION OF THE PROGRAM

The Program was developed to partially mitigate impacts of the CAP canal on threatened and endangered native fishes of the Gila River basin. The Service concluded in a 1994 biological opinion that the CAP is a conduit for transfers of non-indigenous fishes and other aquatic organisms from the lower Colorado River (where the CAP originates) to waters of the Gila River basin. That opinion identified the spread and establishment of nonnative aquatic organisms as a serious long-term threat to the conservation and recovery of native aquatic species, following a long history of habitat loss and degradation. Impacts of nonnatives include predation, competition, hybridization, and parasite and pathogen transmission. In most cases, it is extremely difficult or impossible to remove invaders once they have established.

For these reasons, the 1994 Service opinion concluded that operation of the CAP would jeopardize the continued existence of four native threatened or endangered fish species: Gila topminnow (*Poeciliopsis occidentalis*), spikedace (*Meda fulgida*), loach minnow (*Tiaroga cobitis*), and razorback sucker (*Xyrauchen texanus*). The Service also concluded that the CAP would adversely modify designated critical habitat of spikedace, loach minnow, and razorback sucker. A suite of reasonable and prudent alternatives were designed to monitor the introduction and spread of nonnative aquatic species, construct and operate barriers to prevent the upstream spread of nonnative species, implement fund transfers to the Service to recover natives and control nonnatives, and inform and educate the public about the value of native fishes and the negative impacts posed by nonnatives. In the 2001 revision of the 1994 opinion, the reasonable

1. Investigate novel methods to control nonnative aquatic biota.

YY Male Investigations



Moveable barrier investigations



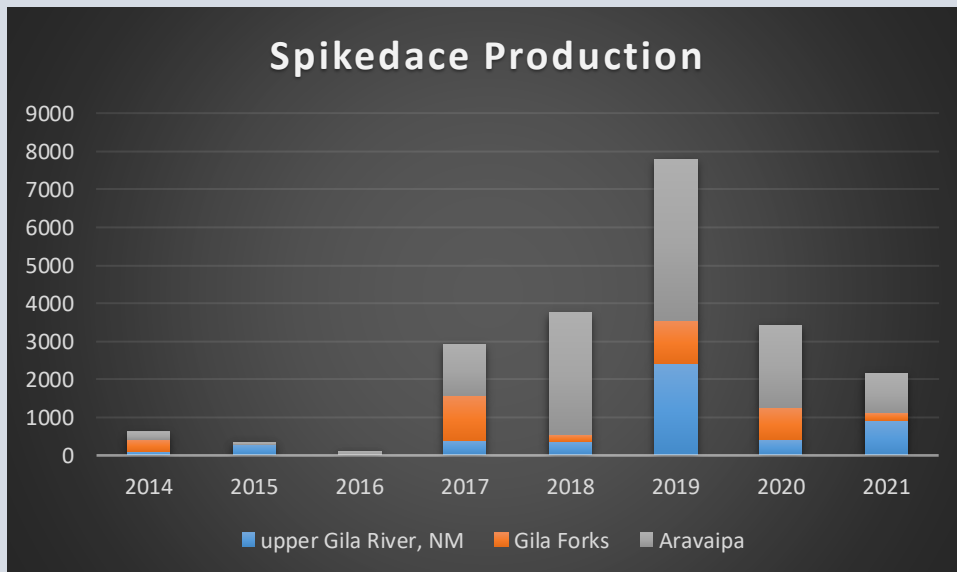
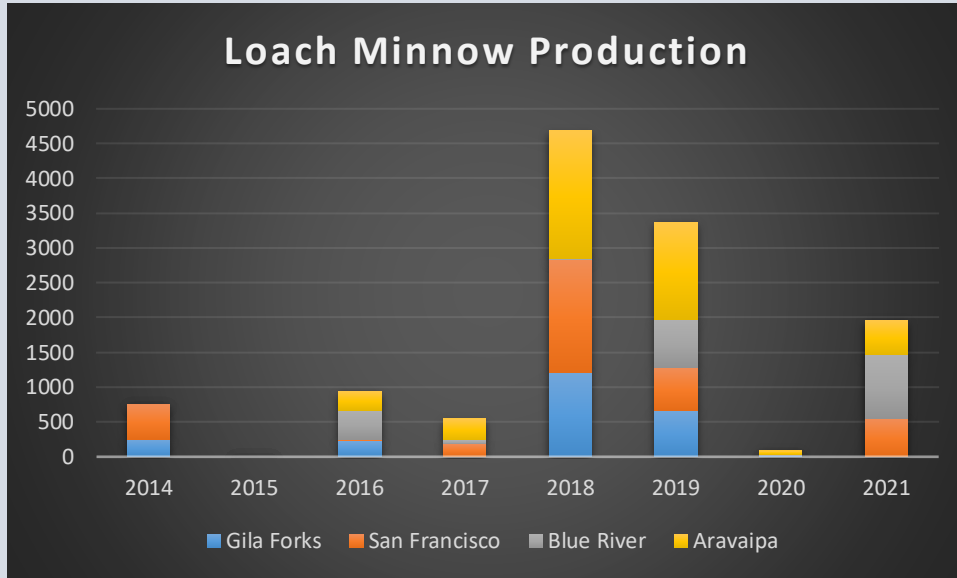
2. Update and assemble existing knowledge of life history needs



New Mexico State University Gila Chub Habitat Suitability Study (Dr. Colleen Caldwell, Kelsie Fields)



### 3. Improve propagation techniques for spikedace and loach minnow



### 4. Develop genetic management plans for priority species

- Gila Topminnow
  - Final Report May 2022
    - Yaqui/Gila Hybrids discovered at ASU holding facility
    - Genetic drift among lineages
    - Headwater livebearer (p. monacha) haplotypes
  - Genetic Management Plan by end of year
- Spikedace and Loach Minnow
  - Final Report September 2021
    - Strong evidence of two distinct spikedace lineages (Aravaipa and upper Gila River)
    - Three unique lineages (Aravaipa, San Francisco, and upper Gila). Blue River has some degree of isolation
    - Need to increase replenish rate for NM populations
  - Genetic Management plans 2022-2023

5. Investigate new stocking strategies to improve survival of repatriated fish.



Kansas State University student scanning for tagged spinedace at Spring Creek.



University of Arizona Razorback Stocking Study Lower Verde/Horseshoe Reservoir

# 5-Year Strategic Plan

## Preventing Extinction and Managing Toward Recovery

1. Identify critical streams and populations in need of protection and potential repatriation.
2. Maintain and operate ASU topminnow holding and ARCC to support Program's recovery efforts....
3. Protect native fish populations from nonnative fish invasions.
4. Remove nonnative aquatic species threats.
5. Replicate populations and their associated native fish community into protected streams and other surface waters.
6. Acquire or work with other programs to acquire easements, land, or water rights to protect key surface water.
7. Protect, maintain, and restore degraded aquatic habitats to use for native fish.
8. Inform and educate the public....
9. Monitor to quantitatively measure and evaluate project success in improving the status of target species and their habitats.
10. Maintain accurate Program tracking records.

GILA RIVER BASIN NATIVE FISHES CONSERVATION PROGRAM  
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1. Identify critical streams and populations in need of protection and potential repatriation.

- Negrito Creek (NM)
- Sapillo Creek (NM)
- Saliz Canyon (NM)
- Harden Cienega Creek (AZ/NM)
- Red Tank Draw (AZ)
- Sharp Spring (AZ)
- Upper Verde River (AZ)
- Spring Creek (AZ)
- West Fork Black River (AZ)
- Redfield Canyon (AZ)

2. Maintain and operate ASU topminnow holding facility and the ARCC to support the Program's recovery efforts.



### 3. Protect native fish populations from nonnative fish.

- Investigating
  - Eagle Creek
  - Upper Verde River (2 barriers)
  - San Francisco River, NM
  - O'Donnell Canyon
- Constructed
  - Aravaipa
  - Fossil Creek
  - Cottonwood Springs
  - Bonita Creek
  - Hot Springs Canyon
  - Blue River
  - Spring Creek (Oak)
  - West Fork Black River



Aravaipa Creek Fish Barrier

### 4. Remove nonnative aquatic species threats



- West Fork Gila River
- Redfield Canyon
- Harden Cienega
- Red Tank Draw
- West Fork Black River
- Bonita Creek
- Aravaipa Creek
- Sharp Spring (rotenone planning)
- Blue River (eDNA confirmation)
- Upper Verde (stock tank investigations)

## 5. Replicate Populations and their associated native fish community...

- Stockings (4 locations)
  - Maternity Well (Gila Topminnow)
  - Telegraph Canyon (Gila Topminnow)
  - Harden Cienega (Gila Topminnow)
  - Rarick Canyon (Gila Chub)
  
- Post Stocking Monitoring (15 locations)
  - Saliz Canyon (Loach Minnow)
  - Bass Canyon (Gila Topminnow)
  - Double R Canyon (Gila Topminnow)
  - Black Canyon City Heritage Park Pond (Gila Topminnow/Desert Pupfish)
  - Arnett Creek (Gila Topminnow)
  - Las Cienegas NCA
    - Bill's Wildlife Pond (Gila Topminnow)
    - Maternity Wildlife Pond (Gila Topminnow)
  - Mud Spring (Gila Topminnow)
  - Peterson Ranch Pond (Gila Topminnow)
  - Telegraph Canyon (Gila Topminnow)
  - Tortilla Creek (Gila Topminnow)
  - Rarick Canyon (Gila Chub)
  - Sabino Canyon (Gila Chub)
  - Spring Creek (Spikedace)
  - Middle/Upper Blue River (Spikedace, Loach Minnow, Roundtail Chub)

## 6. Acquire or work with other programs to acquire easements, land, or water rights to protect key surface water.

- Nothing to report this year

7. Protect, maintain, and restore degraded aquatic habitats to use for native fish.

- Nothing to report this year

8. Inform and educate the public....

**#NativeFish**




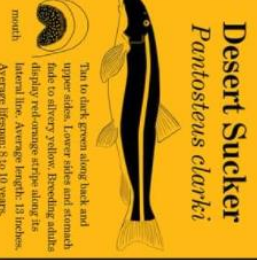





**#GilaRiver Basin NATIVE FISHES**

**#HealthyFisheries**

**#HealthyHabitats**

**#CatchTheFun**

**#ConservationThroughParticipation**

<p><b>Sikedace</b> <i>Meda fulgida</i></p>  <p>Olive to brown along back. Sides metallic silver with yellow along sides, head, and base of fin. Average length: 3 inches. Average lifespan: 1 to 2 years.</p>	<p><b>Longfin Dace</b> <i>Agosia chrysogaster</i></p>  <p>Silvery gray along back and upper sides. Fades to white along lower sides and stomach. Breeding adults develop breeding tubercles. Average length: 3 inches. Average lifespan: 2 years.</p>	<p><b>Loach Minnow</b> <i>Tarogya cobitis</i></p>  <p>Olive in color with dark blotches. Breeding males have red-orange coloring along mouth and fin. Females have yellow coloring. Average length: 2 inches. Average lifespan: 2 years.</p>
<p><b>Desert Sucker</b> <i>Pantosteus clarki</i></p>  <p>Tan to dark green along back and upper sides. Lower sides and stomach fade to silvery yellow. Breeding adults display red-orange stripes along the lateral line. Average length: 11 inches. Average lifespan: 5 to 10 years.</p>	<p><b>Gila Topminnow</b> <i>Poeciliopsis occidentalis</i></p>  <p>Male topminnow: Breeding males turn dark in color. Orange at the base of the gonopodium (modified anal fin). Bright yellow pelvic, pectoral, and tail fins. Average length: 1 inch. Average lifespan: 1 year.</p>	<p><b>Sonora Sucker</b> <i>Catostomus insignis</i></p>  <p>Brown to yellowish brown along back and sides. Stomach is yellow and clearly defined. Average length: 13 inches. Average lifespan: 8 to 10 years.</p>
<p><b>Roundtail Chub</b> <i>Gila robusta</i></p>  <p>Young are silvery in color. Adults become darker along back and may have dark mottling or blotches. Breeding adults have orange-red coloring along the stomach and base of fins (except dorsal fin). Average length: 13 inches. Average lifespan: 8 years.</p>	<p><b>Speckled Dace</b> <i>Rhinichthys osculus</i></p>  <p>Olive to gray in color with a light stomach. Breeding males may darken completely and have red along the base of its lower fins and mouth. Average length: 3 inches. Average lifespan: 3 years.</p>	<p><b>Gila Trout</b> <i>Oncorhynchus gilae</i></p>  <p>Iridescent gold along head and back, fading to yellow along sides. Stomach is lighter, often white, but may darken to yellow or reddish-orange in breeding adults. Average length: 12 inches. Average lifespan: 5 years.</p>

## 9. Monitor to quantitatively measure and evaluate project success in improving the status of target species and their habitats.

- Completion of monitoring plan.
- Continued with range wide spikedace and loach minnow eDNA project.

## 10. Maintain accurate Program tracking records

2022

Gila River Basin Native Fish Conservation Program Budget and Work Plan



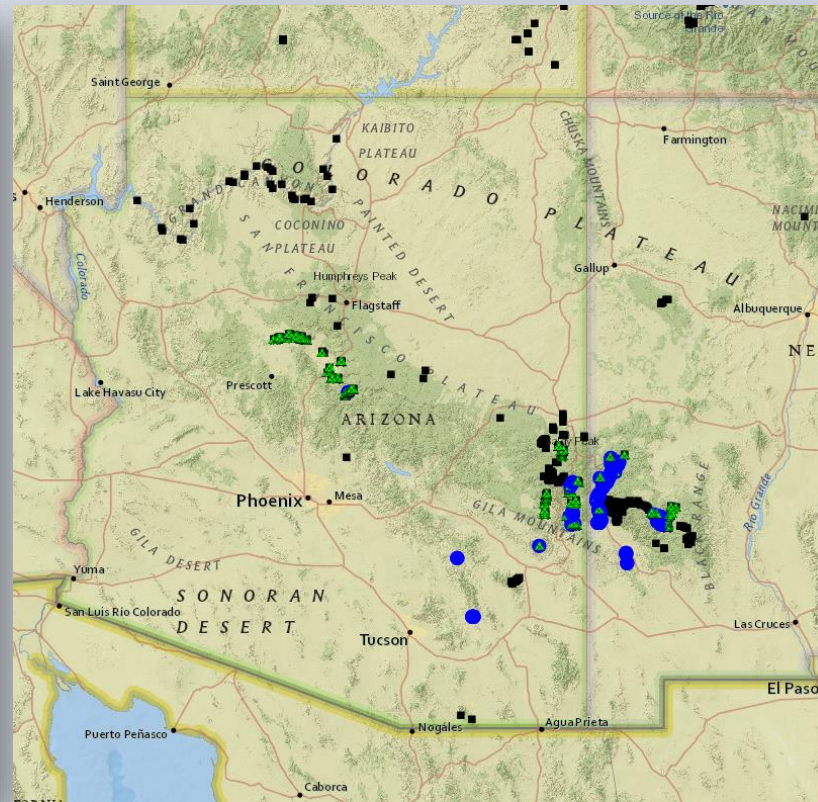
### LONG-TERM MONITORING PLAN FOR NATIVE FISH POPULATIONS IN THE GILA RIVER BASIN VERSION 1.0



Prepared by  
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Broomfield, Colorado 80021

October 2020





Scientific Foundation			
No	Goal	Objective	Status
1	Investigate novel methods to control nonnative aquatic biota.	a) Seek at least one opportunity to partner or fund new control methods or improvements upon existing methods.	1) YY male project (2018-2022) (U of A). 2) Investigations of Ammonia Chloride as a removal tool and the EPA registration process (2019-2021) (NAU/USGS). 3) Investigations of moveable barriers to aid in removal efforts (2020-2021) (TSC - BOR).
2	Update and assemble existing knowledge of life history needs and ecology of Gila River basin native fishes.	a) As opportunities arise, initiate ecological/life history studies of native biota where such understanding can assist with conservation goals of the Program.	KSU rangewide habitat assessment for spikedace and loach minnow (2018-2020). Gila Chub habitat suitability Study - San Francisco River (2020-2022) (NM State University).
3	Improve propagation techniques for spikedace and loach minnow.	a) At a minimum, identify and implement at least one research project aimed at improving propagation.	New spawning tanks in 2017. ARCC rearing density study (2018-?)
4	Develop genetic management plans for priority species.	a) Develop genetic management plans for spikedace, loach minnow, and gila topminnow by 2022.	Spikedace and loach minnow (UofNM) and Gila Topminnow (SWSNARRC) conducting genetics. Plans still need to be developed. We have provided funding to SNARRC and will initiate development of plans in 2022.
5	Investigate new stocking strategies to improve survival of repatriated fish.	a) At a minimum, document existing stocking strategies, identify locations with poor survival, and identify likely causes of poor survival.	KSU study to investigating use of PIT tags to assess stocking efforts (2020-2022). AZGFD has collaborated with KSU to continue this work in 2022.

Scientific Foundation		
No	Goal	Status
1	Investigate novel methods to control nonnative aquatic biota.	
2	Update and assemble existing knowledge of life history needs and ecology of Gila River basin native fishes.	
3	Improve propagation techniques for spike dace and loach minnow.	
4	Develop genetic management plans for priority species.	
5	Investigate new stocking strategies to improve survival of repatriated fish.	
Preventing Extinction and Managing Toward Recovery		
No	Goal	Status
1	Identify critical streams and populations in need of protection and potential replication.	
2	Maintain and operate ASU topminnow holding facility and the Aquatic Research and Conservation Center (ARCC) to support the Program's recovery efforts for imperiled fishes in the Gila River Basin through the establishment of refuge populations of genetically distinctive stocks as insurance against extinction in the wild, captive propagation for repatriation, and applied research.	
3	Protect native fish populations from nonnative fish invasions.	
4	Remove nonnative aquatic species threats.	
5	Replicate populations and their associated native fish community into protected streams and other surface waters.	
6	Acquire or work with other programs to acquire easements, land, or water rights to protect key surface water.	
7	Protect, maintain, and restore degraded aquatic habitats to use for native fish.	
8	Inform and educate the public about the conservation status and values of native fishes and the problems nonnative fishes create for them.	
9	Monitor to quantitatively measure and evaluate project success in improving the status of target species and their habitats.	
10	Maintain accurate Program tracking records.	

# Questions



A large concrete dam with a steel arch bridge spanning across it, set against a backdrop of red rock cliffs and a clear blue sky. The dam is a curved concrete structure with several vertical buttresses. The bridge is a steel truss arch bridge. The surrounding cliffs are reddish-brown and show signs of weathering. The sky is a clear, bright blue. The water in the foreground is calm and reflects the dam and the bridge.

# Fish Barriers

# Bonita Creek Beaver Dam Removal



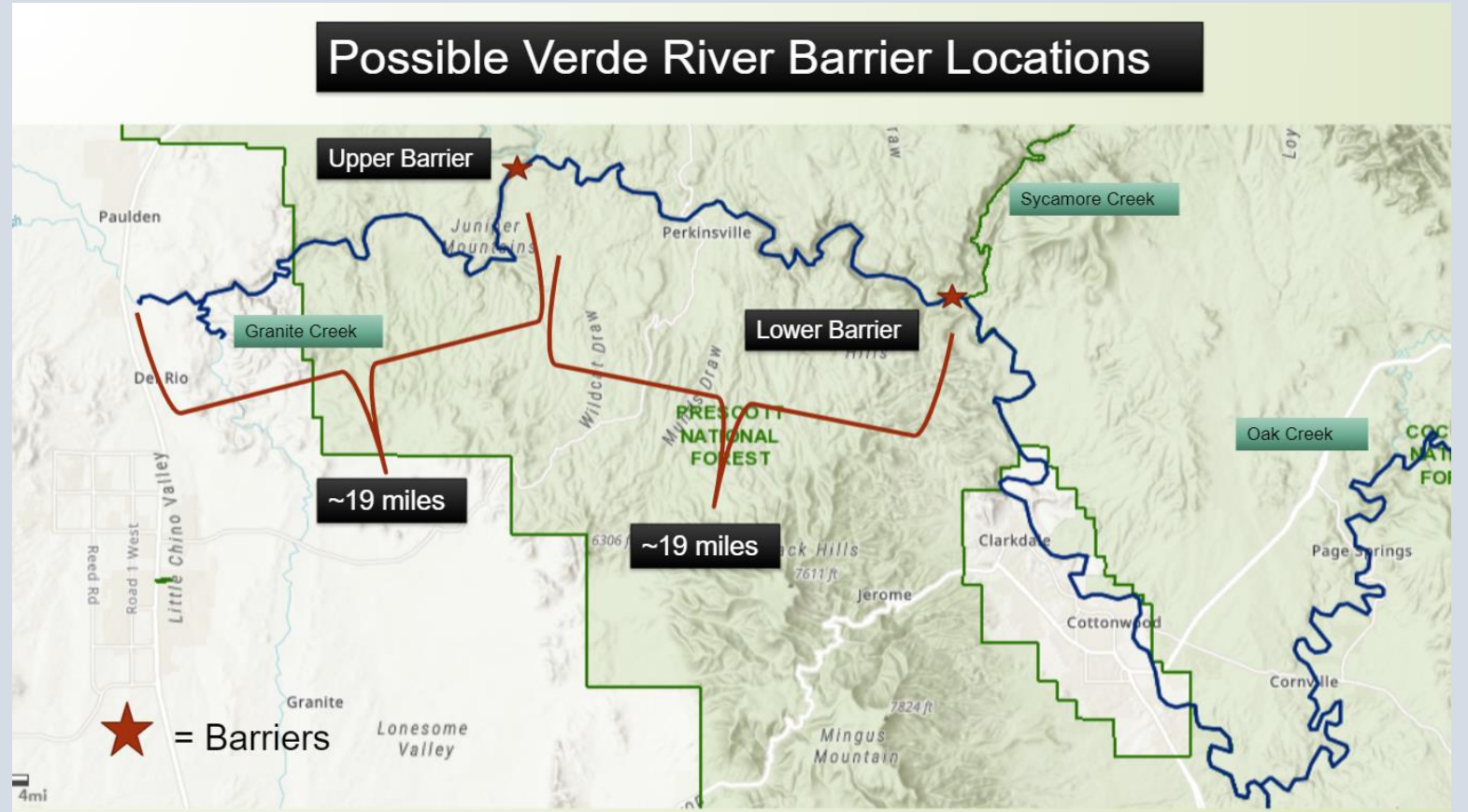
- **Eagle Creek**

- Delay with Freeport access agreement
- NEPA initiation summer 2022
- Earliest construction fall 2023 or spring 2024.



- **Verde River (2)**

- Wild and Scenic Suitability
  - Scoping completed April 11
  - Draft EA July/August
  - Final EA FONSI Early 2023
- Barrier NEPA 2023/2024
- Earliest construction of first barrier fall 2024/spring 2025



# Pleasanton Diversion on San Francisco River





# Questions



**GILA RIVER BASIN  
NATIVE FISHES  
CONSERVATION PROGRAM**



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# Information & Education

**Kent Mosher (Phoenix Area Office)**

# I&E: Field Guide to the Fishes of Arizona

## Field Guide to the Fishes of Arizona

- Funds transferred in April 2021.
- Text has been completed, edited, and peer-reviewed.
- Completed maps of Arizona waters and color photos of extent fish taxa/habitats.
- Field guide includes...
  - Introductory materials
  - Illustrated identification guide
  - Key to families and species
  - Family and individual species accounts
  - Rare encounters
  - Glossary, literature cited, and multiple indices
- A publication contract has been signed and the book is in layout stage.
- Release is expected in late 2022.



# I&E: Sharing Tails

## Sharing Tails

- Funds transferred to Marsh Education in April 2021.
- During Fall Semester (August to December 2021)...
  - Presented virtually at 11 schools in five Phoenix Metro school districts.
  - Kindergarten, First, and Second grades.
  - 1,027 Children and 49 Teachers.
  - All students received pre- and post-visit materials, including a native fish replica.
- CCAST Webinar: <https://www.youtube.com/watch?v=ri3nJqanMsk>



# I&E: Gila River Basin Fish Conservation Film Project

## Gila River Basin Fish Conservation Film Project

- Funds transferred in September 2021.
- U.S. Forest Service (in partnership with Freshwaters Illustrated) will develop...
  - 6 to 10-minute film exploring Gila River basin native fishes/species & conservation needs.
  - 1 to 2-minute short film formatted for social media.
  - Educational media kit of 24-36 still images licensed for use by Reclamation, USFS, and partners.



# I&E: Native Fish in the Classroom

## Native Fish in the Classroom

- During 2021...
  - Virtually presented at three schools reaching about 75 children.
  - Developed an entire virtual curriculum with narrated presentations and worksheets.
  - Developed a video observation series.
    - <https://www.fws.gov/southwest/fisheries/nmfwco/education.html>
  - Designed and created bandanas featuring information on Gila River basin fishes.



Gila NFIC loach minnow



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