Cultivating Conservation In
The Upper Colorado River Basin

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Fish Culturist
Educational Outreach
Recover the endangered fish as water development proceeds in compliance with the Endangered Species Act, state water law, interstate compacts, and federal trust responsibilities to tribes.
Established in 1988

Partners
- State of Colorado
- State of Utah
- State of Wyoming
- Bureau of Reclamation
- Colorado River Energy Distributors Association
- Colorado Water Congress
- National Park Service
- The Nature Conservancy
- U.S. Fish and Wildlife Service
- Utah Water Users Association
- Western Area Power Administration
- Western Resource Advocates
- Wyoming Water Association
Why have a Recovery Program?

- To coordinate and provide guidance for various endangered fish conservation projects in the Upper Colorado River Basin in a way to most efficiently and effectively recover struggling endangered fish populations.
- The intent of the Endangered Species Act is to halt and reverse the trend toward species extinction.
Threatened and endangered fishes of the Upper Colorado River Basin

- Colorado pikeminnow
  *Ptychocheilus lucius*

- Razorback sucker
  *Xyrauchen texanus*

- Humpback chub
  *Gila cypha*

- Bonytail
  *Gila elegans*
Threatened and endangered fishes of the Upper Colorado River Basin

Razorback sucker
*Xyrauchen texanus*

- Lived in the Colorado river for over 5 million years
- Live up to 40 years
- Grow up to 3 Feet long
- Reproduce 3-4 years
- Omnivorous
- Huge Keel
- Listed as endangered in 1991
- Largest suckerfish in North America!
Threatened and endangered fishes of the Upper Colorado River Basin

Razorback sucker
*Xyrauchen texanus*
Over 5 million year old razorback sucker fossil discovered in Southern California

Fig. 1. Early Pliocene fossil *Xyrauchen texanus* (SBCM A768-1) from Anza Borrego Desert, southern Calif.
Threatened and endangered fishes of the Upper Colorado River Basin

Colorado pikeminnow
_Ptychocheilus lucius_

- Lived in the Colorado River 3-5 million years ago
- Live up to 40 years
- Historically grew up to 6 feet long, 100 pounds!
- Known to migrate hundreds of miles to spawn
- Reproduce in 5-7 years
- Pre-listed as endangered in 1967 (before ESA existed)
- Listed as endangered in 1973
- Largest minnow in North America

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Threatened and endangered fishes of the Upper Colorado River Basin

- Lived in the Colorado River 3-5 million years ago
- Live over 30 years
- Grow over 2 Feet long
- Reproduce in wild 2-3 years
- Omnivorous
- Listed as endangered in 1980
- Very rare
- Pencil thin caudal peduncle

Bonytail
*Gila elegans*
Threatened and endangered fishes of the Upper Colorado River Basin

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Threatened and endangered fishes of the Upper Colorado River Basin

Humpback chub *Gila cypha*

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- Officially listed in 1973
Threatened and endangered fishes of the Upper Colorado River Basin

Humpback chub
*Gila cypha*
5 million years!

- Hawaii
- Megalodon: 2.5 million years
- Yellowstone Eruptions: 2.1 million years, 1.2 million years, 640,000 years
- Modern Man (Homo sapiens): 300,000 years
- Neanderthal: 40,000 years
- Saber Tooth Tiger: 12,000 years
- Wooly Mammoth: 10,000 years

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- Saber To
Where do these fish live?

- Seven U.S. states and two Mexican states.
- The natural course of the river flows from the Continental Divide in Rocky Mountain National Park, into the Gulf of California.
Colorado River

- Modified flows in the Colorado River are not what they once were.
- Colorado River has not flowed to the Gulf of California for decades except for a few experimental floods.
- Basically dewatered downstream of Yuma, AZ.
Upwards of 80% of the water is utilized for agriculture
Contributing Factors For Lower Fish Population's

- Water Depletion
- Modified Flows
- Fish barriers
- Nonnative fish
Other challenges for native fish

- Habitat degradation
- Climate Change
- Pollution/Contaminants
- Overfishing
- Disease/Parasites
- More?
What we do to mitigate these challenges

With all of these problems, what can we do?
Managing Flows for Endangered Fish

Stocking Endangered Fish

Nonnative Fish Control

Research and Monitoring

Information and Education

Fish Habitat Development

Program Actions

Nonnative Fish Control
How We Mitigate These Challenges
Research and Monitoring
How We Mitigate These Challenges

Monitoring with Passive PIT tag Antennas
How We Mitigate These Challenges
Monitoring- Early Life Stages of Endangered Fish
Monitor- Adult Populations of Endangered Fish

- Colorado River
  - Colorado pikeminnow and razorback sucker
- Desolation/Gray Canyons
- Cataract Canyon
  - Humpback chub
How We Mitigate These Challenges

Fish Ladders & Fish Passages
Three Focal Nonnative Fish

Northern pike *Esox lucius*

Smallmouth bass *Micropterus dolomieu*

Walleye *Sander vitreus*

These fish escaped from reservoir sources and established populations in river habitats.

Fish Illustrations copyright Joe Tomelleri
Roughly 70 nonnative fish species have been introduced into the Colorado River Basin since turn of the century vs. 13 native species.
Nonnative Fish Removal

Again, roughly 70 nonnative fish species have been introduced into the Colorado River Basin since turn of the century !!!
Controlling nonnative fishes in the Colorado River basin can be challenging and very expensive. The most efficient way to control them is through prevention!!!
How We Mitigate These Challenges
Manipulate river flows to have the maximum benefit for these fish

Granby dam

Ruedi dam
How We Mitigate These Challenges

Fish Screens on Irrigation Canals and Yearly Fish Rescue

Fish screens on irrigation canals

Canal Salvage
How We Mitigate These Challenges
How We Mitigate These Challenges

Propagation - Ouray National Fish Hatchery - Grand Valley Unit

Horsethief Canyon Native Fish Facility

24 Road Hatchery (Indoors)
How We Mitigate These Challenges

Propagation - Ouray National Fish Hatchery - Grand Valley Unit

3 week old razorback sucker
Razorback sucker waterslide
How We Mitigate These Challenges

Educational Outreach Events and Activities
How We Mitigate These Challenges

Educational Outreach at local schools
How We Mitigate These Challenges

Current and Future Habitat Projects For Endangered Fish Utilizing Off-Channel Wetlands

Stewart Wetland

Audubon Pond
Spring- During runoff after larval razorback sucker are detected in the Green River, biologists screen off and fill the wetland to entrain these larval native fish. Fish grow vigorously in the wetland during the warm summer months. The screen helps to minimize nonnative fish from also being entrained.

Fall- The entrained native fish are PIT tagged and released into the river Green River.

Winter- The wetland stays dry over winter until next spring to allow the system to reset and not be overtaken with nonnative fish and vegetation.
How We Mitigate These Challenges
Habitat Projects For Endangered Fish
Stewart Wetland on the Green River

Spring- Weir at inlet gate while filling wetland

Fall- Weir and trap system at outlet gate
Fall draining of Stewart Wetland is currently happening and has yielded roughly 600 razorback sucker so far this year. Likely more fish to come as they finish draining this week (Oct. 3, 2022).
Audubon Pond in the Grand Valley at the Audubon Nature Preserve near Connected Lakes

Current Grand Valley partnership between: Audubon Society, Ducks Unlimited, U.S. Fish and Wildlife Service and the Upper Colorado Endangered Fish Recovery Program
Instream Flow Coordinator David Graf is currently working with the Grand Valley River Corridor Initiative, helping to work with stakeholders to: foster the river corridor as a public amenity; restore and conserve natural resources; encourage river smart and compatible development; and build community engagement, education, and awareness of the Grand Valley River Corridor.
The view is fairly optimistic for habitat restoration projects to benefit endangered fish around the Grand Valley—but much depends on maintaining proper water flows.

The “15-Mile Reach” is very important habitat for these fish!
Species Status: Razorback Sucker

- Proposed downlisting action
- Record number of "Young-of-Year" in San Juan River in 2018
- Encouraging signs of recruitment in numerous river reaches
Species Status: Colorado Pikeminnow

Upper Basin:
**Colorado River**- Fairly stable population of Colorado Pikeminnow but very vulnerable to negative river conditions

**Green River**- Populations declining in the Green River

**San Juan River**- Fairly stable population. Significantly more Colorado Pikeminnow than the past few decades

Lower Basin:
Few if any Colorado pikeminnow are present
Species Status: Humpback Chub

- Recently downlisted from endangered to threatened !!!
- Very large stable population in the Grand Canyon
- Four persistent populations in the upper basin
- Conservation success story!
Species Status: Bonytail

- Program increased #’s and Size of Stocked bonytail
- Encouraging discoveries of this spp. use of floodplain habitats
- PIT antenna reveal more re-sights than traditional sampling techniques
- 12 year old fish found near stocking locations
Why should we care about these species?

- Indicator species of river health
- Important niche in the ecosystem
- Moral obligation to save from extinction
- Obligated by federal law under Endangered Species Act of 1973
- Sustain local flows of water in the Colorado River
- Fish recovery efforts coexist with water development and irrigation efforts
How To Get Involved?

- Volunteer
- Internship
- College Degree Science/Biology/Fisheries/Wildlife
- Gaining experience
- Foot in the door/Networking
- Enthusiasm in science, fish and/or conservation

https://www.usajobs.gov/
How To Get Involved?

WHAT DO YOU CALL A FISH WITH NO EYES ??

FSH ?

Questions???