

# **The Desert Fish Habitat Partnership:** *Addressing conservation for imperiled and under-served freshwater fishes at a regional scale*



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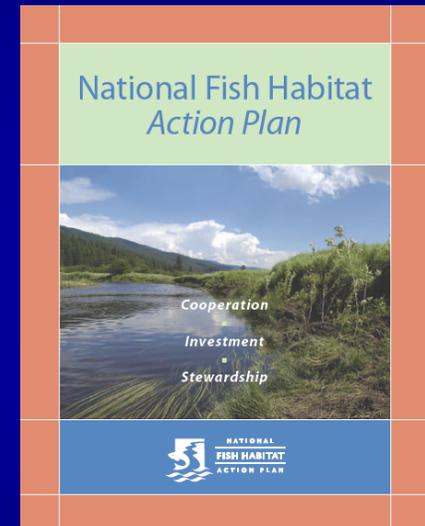
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# National Fish Habitat Action Plan

## Goals:

- Protect and maintain intact healthy aquatic ecosystems supporting fish habitats.
- Prevent further degradation of fish habitats that are impaired.
- Reverse declines in the quality and quantity of fish habitats to improve the overall population status of fish and other aquatic organisms.
- Increase the quality and quantity of fish habitats that support a broad natural diversity of fishes and other native aquatic species.



# Development of the Desert Fish Habitat Partnership



- Presentation about the *National Fish Habitat Action Plan and the potential for a Desert Fish Partnership*) at the **2005** Desert Fishes Council Meeting, Cuatrociénegas, Coahuila, México.
- Discussions for a partnership that would focus on protecting, restoring, and enhancing *native* desert fish and their habitats began shortly thereafter.

# The Desert Fish Habitat Partnership

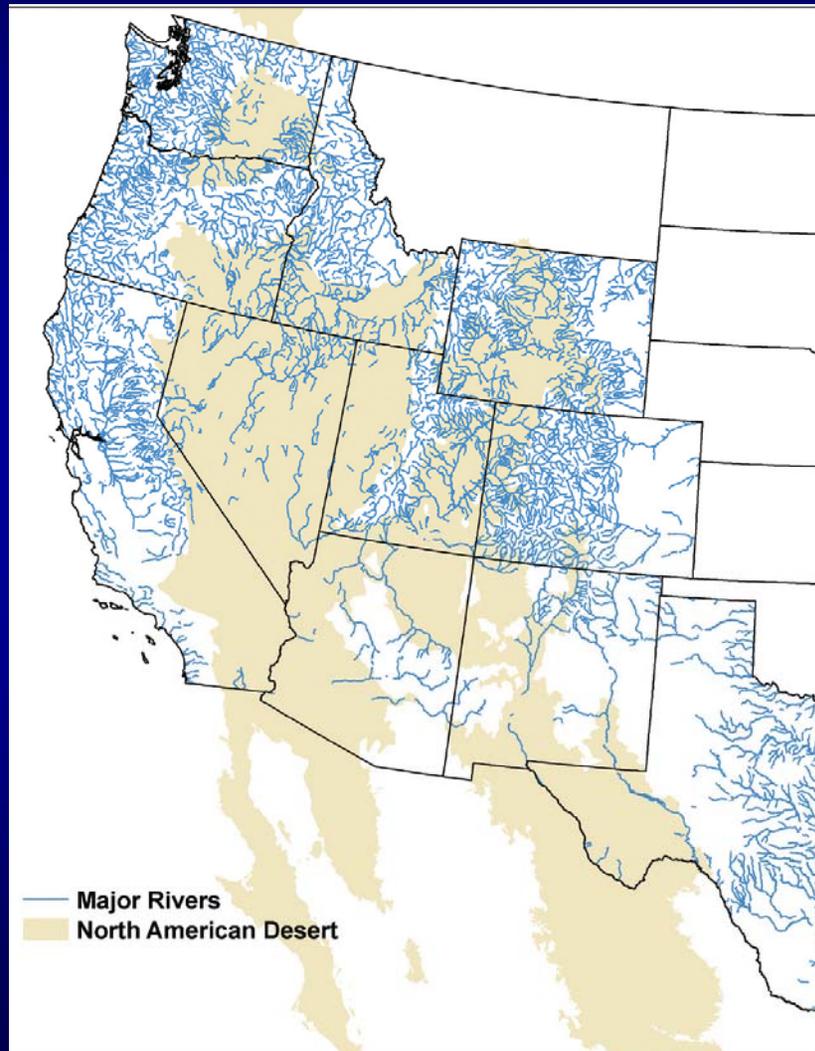


**Purpose:** To conserve aquatic habitat in the arid West for desert fishes and the American people by protecting, restoring and enhancing these unique habitats in cooperation with and in support of, state fish and wildlife agencies, federal agencies, native American tribes, conservation organizations, and individuals.

# What is the DFHP?

- A cooperative partnership composed of state and federal management agencies, the Southwest Tribal Fisheries Commission, NGO's, and private cooperators.
- Based on Fish Habitat Partnership guidance from the National Fish Habitat Action Plan (NFHAP).
- The only NFHAP partnership with ***specific emphasis on native, non-game fish species*** and the habitats that support them.

# DFHP Geographic Scope



The DFHP partnership is defined by drainage basins within the deserts of North America: the Chihuahuan, Great Basin, Mohave, and Sonoran.

*Map adapted from  
Ecological Regions of  
North America,  
Commission for  
Environmental  
Cooperation (1997)*

# DFHP Geographic Scope



Four DFHP sub-regions are delineated based on ecological characteristics and species distributions.

# Why a Desert Fish Habitat Partnership?

- 50% of U.S. threatened and endangered fishes occur in the arid west.
- 54 freshwater fishes listed under ESA occur within the DFHP.
- Desert aquatic habitats within the DFHP support over 179 at-risk, non-salmonid fish species.
- Eight of top 10 states within the U.S. with at-risk freshwater fish species are DFHP partner states (AZ, UT, NV, CA, NM, OR, TX, and ID).

# Why a Desert Fish Habitat Partnership?

- Desert fish species distributions cross one or more states, cross multiple Federal and State lands, and occur on tribal and private lands.
- There has been no comprehensive regional approach to address significant threats affecting habitats and at-risk species across the American West.
- There is a real and continuous loss of aquatic habitat in the rapidly developing arid West.
- There has been a general lack of coordination for multiple species during habitat restoration efforts.

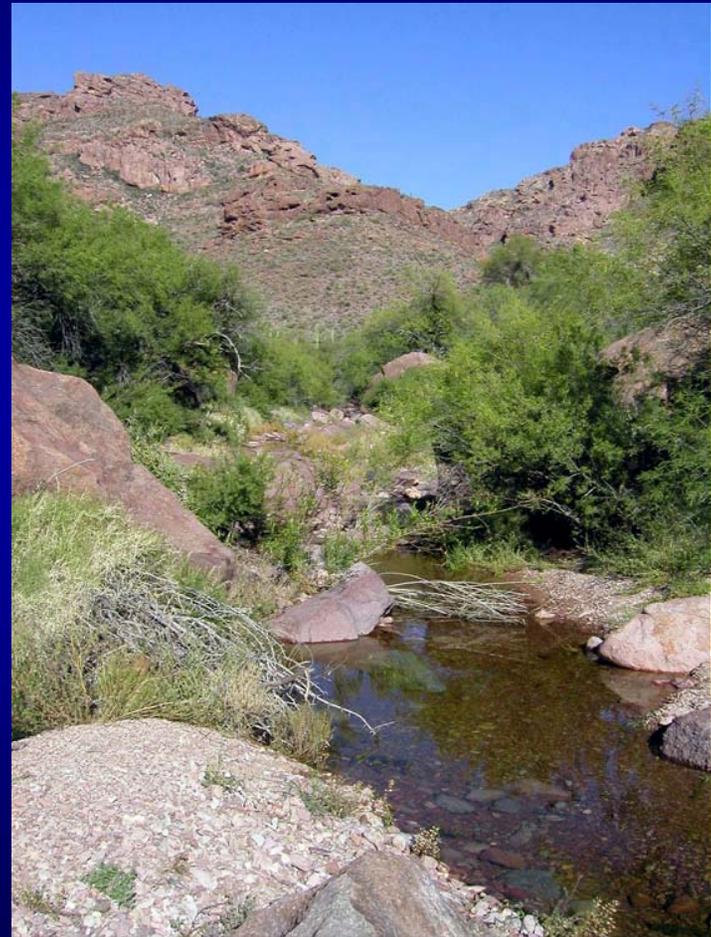
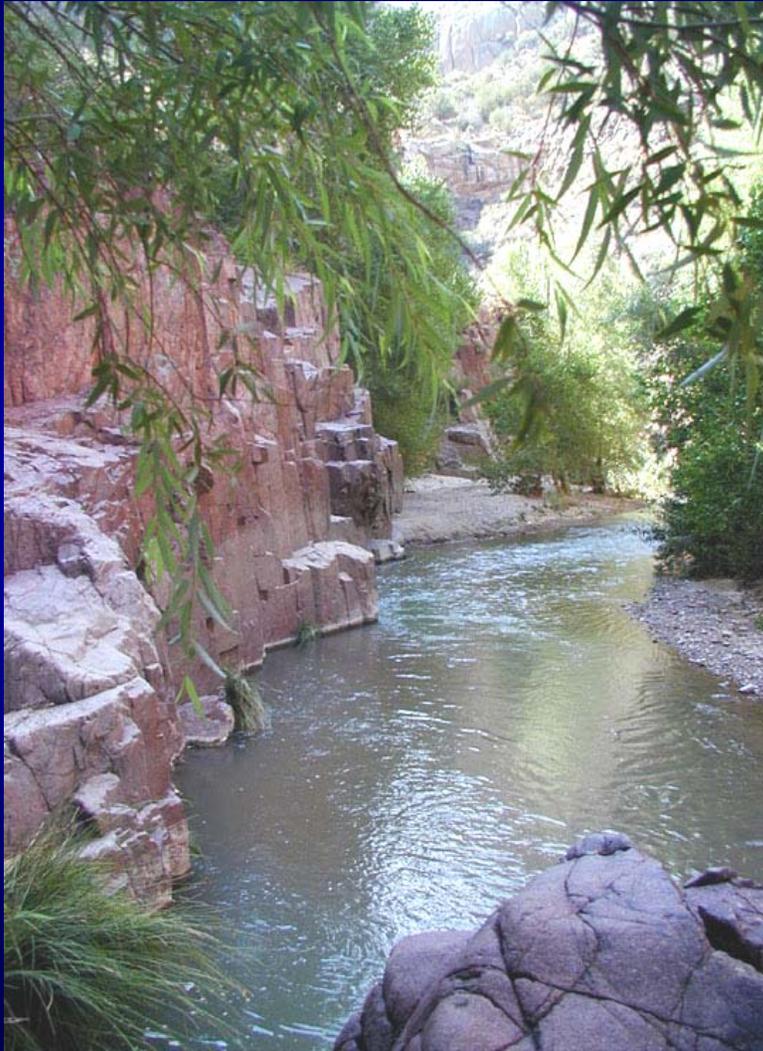
# Desert Aquatic Habitats within the DFHP

- Mainstem Rivers
- Headwater Streams
- Springs/Springbrooks
  - Cienegas

**Mainstem Rivers** (e.g., Colorado, Gila, Virgin, San Rafael, Rio Grande, and Pecos).



## Headwater Streams (Aravaipa Creek and Alamo Creek).



## **Springs/Springbrooks:**

areas where groundwater flows naturally from a rock or soil substrate to the surface to form a stream, pond, marsh or other type of water body.





## Ciénegas:

permanent, scarcely-fluctuating sources of water associated with perennial springs and headwater streams.

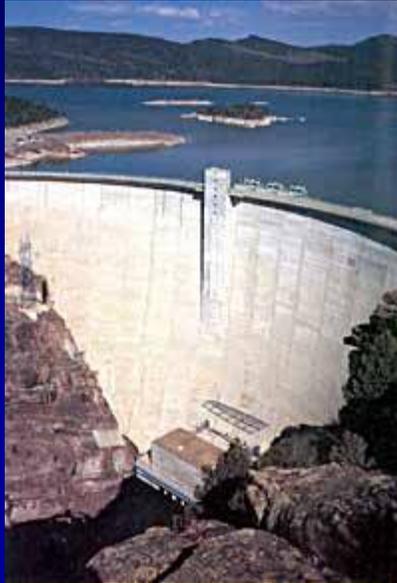
Vegetation is limited to those species which can tolerate saturated soils.

# Threats and Stressors to Desert Aquatic Habitats

- Habitat degradation, fragmentation, and loss.
- Surface water and groundwater development.
- Introduction, spread, and establishment of nonnative fish species.
- Climate change.

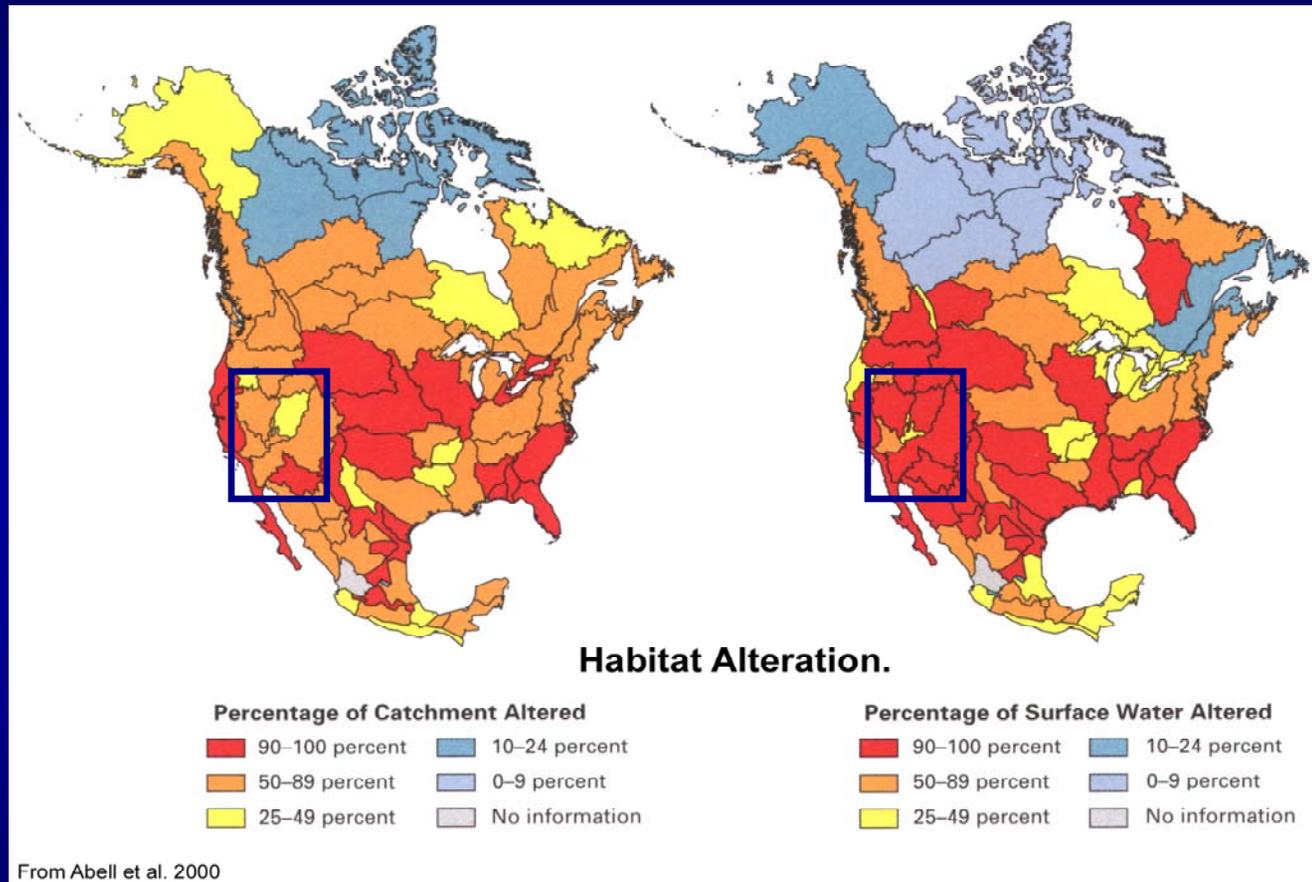


# THREATS: Habitat Alteration and Loss



- A legacy of physical alteration and poor water management has affected aquatic habitats on a regional scale throughout the west.

# THREATS: Surface Water Development



- Surface waters in the Western US are and continue to be altered at a significant scale for urban needs, irrigation, and flood control.

# THREATS: Groundwater Development

- Rapid urbanization and extended drought conditions/climate change place increasing demands on groundwater resources.



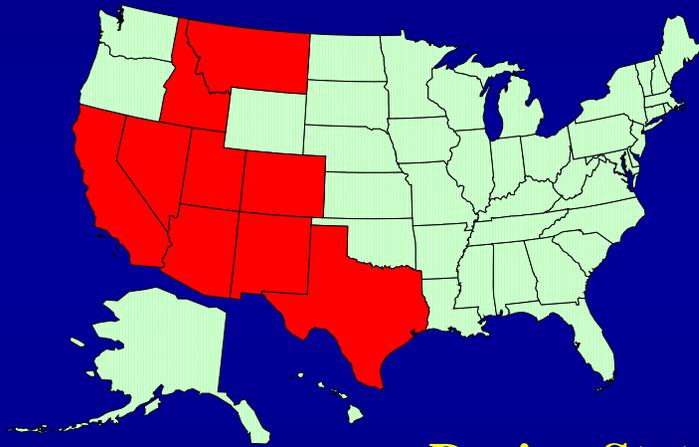
- Development of regional aquifers, inter-basin transfers have serious implications for aquatic habitats at a landscape scale.

# THREATS: Introduction and Spread of Nonnative Species

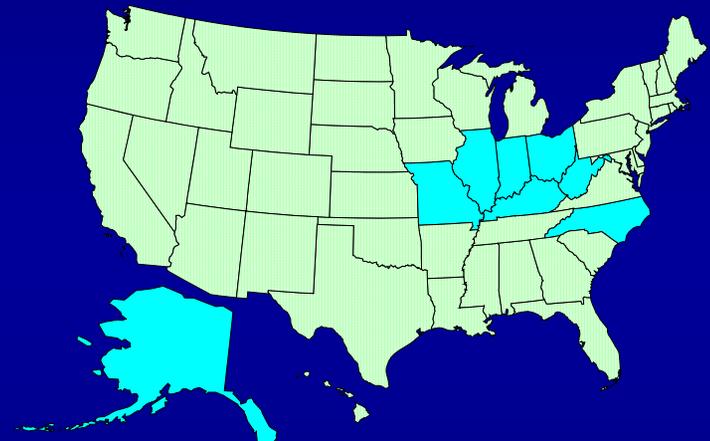


# THREATS: Climate Change

## Redistribution of U.S. Water Resources



**Drying States**



**Wetting States**

- Changing risk of unmet water demands, floods, and droughts.
- Delayed and reduced snow pack runoff and groundwater effects.
- Altered hydrology in aquatic habitats (e.g., loss and fragmentation ).
- Changing abundance and distribution of fish species.

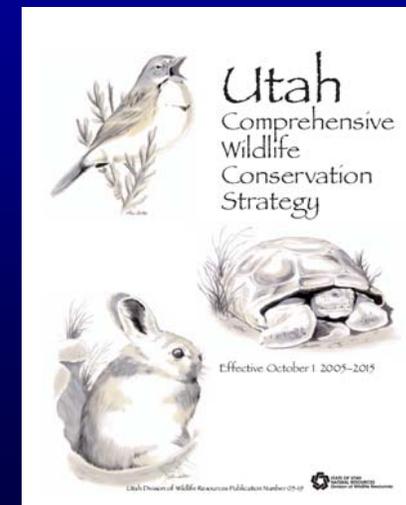
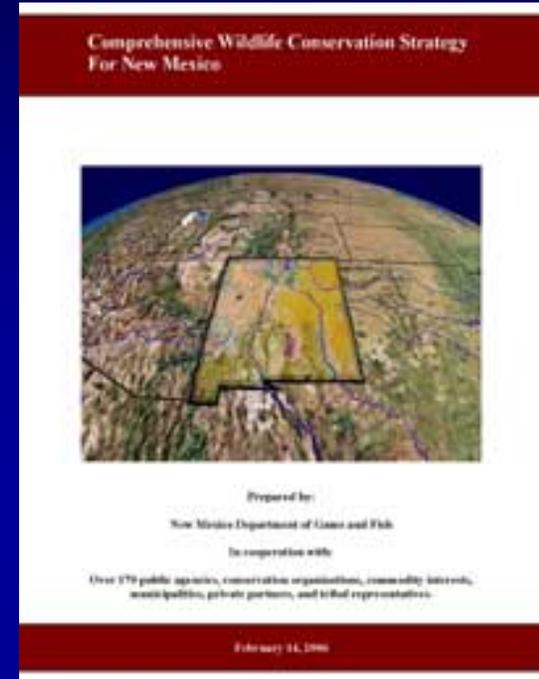
# Role of the DFHP

- Implement the *Framework for Strategic Conservation of Desert Fishes*.
- Support implementation of priority habitat-based actions for desert fish identified in State Wildlife Action Plans, multi-species conservation plans, or other species/habitat plans.
- Develop long-term human and financial resources for desert fish habitat restoration.



# Desert Fish Habitat Strategic Plan

- The Desert Fish Habitat Strategic Plan utilizes *State Wildlife Action Plans* (SWAPs) of the 11 partner states and other existing resources to determine:
  - State level need assessments
  - Species of greatest conservation need
  - Habitat threats
  - Conservation actions



# DFHP Conservation Priorities



## Desert Fish Habitat Partnership

Framework for Strategic Conservation of Desert Fishes, 2008



Desert Fish Habitat Partnership Workgroup

The DFHP strategic plan is guided by the following three fundamental conservation priorities:

1. Integrate priorities from SWAPs with the NFHAP strategies.
2. Prioritize projects to conserve and restore habitat for the most under-served, imperiled desert fish species.
3. Implement on-the-ground projects that focus actions to protect the most under-served, imperiled desert fish species.

# DFHP SPECIES MATRIX

Common Name	Scientific Name	State Occurrence	Desert Endemic	ESA status	Global Heritage Rank	Habitat Type				Desert Occurrence			OHHP Rank
						Rivers	Streams	Springs	Cienegas	Upper Colorado	Lower Colorado	Rio Grande Basin and Range	

## The DFHP species matrix

1. Species identified in State Wildlife Action Plans as species of greatest conservation need.
2. Degree of **endemism**, ESA status, Global Heritage Rank, habitat type where found, and sub-region where found.
3. Rank determined also by cross-jurisdictional cooperation need, and **current management level**; Ranking scores range from a high of 2.67 to a low of 0.89.

# DFHP Species Matrix

Common Name	Scientific Name	State Occurrence	Desert Endemic	ESA status	Global Heritage Rank	Habitat Type				Desert Occurrence				OHHP Rank
						Rivers	Streams	Springs	Cienegas	Upper Colorado	Lower Colorado	Rio Grande	Basin and Range	
Sonora chub	<i>Gila ditaenia</i>	AZ	X	T	2		X				X			2.22
bonytail	<i>Gila elegans</i>	AZ, CA, NV, UT	X	E	1	X				X	X			1.67
Gila chub	<i>Gila intermedia</i>	AZ, NM	X	E	2		X	X	X		X			2.11
headwater chub	<i>Gila nigra</i>	AZ, NM	X	C	2		X	X			X			2.44
Chihuahua chub	<i>Gila nigrescens</i>	NM	X	T	1	X	X	X	X			X		2.22
Rio Grande chub	<i>Gila pandora</i>	CO, NM, TX	X		3	X	X					X		2.56
Yaqui chub	<i>Gila purpurea</i>	AZ	X	E	1	X	X	X			X			2.33
roundtail chub	<i>Gila robusta</i>	AZ, CO, NM, UT, WY	X		3	X	X			X	X			2.00
Pahranagat roundtail chub	<i>Gila robusta jordani</i>	NV	X	E	3		X	X					X	2.11
Virgin River	<i>Gila seminuda</i>	AZ, NV, UT	X	E	1	X					X			2.11
California roach (Pit)	<i>Hesperoleucis symmetricus mitrulus</i>	CA, OR			5		X						X	1.33
Rio Grande silvery minnow	<i>Hybognathus amarus</i>	NM, TX	X	E	1	X						X		2.00
least chub	<i>Notichthys phlegethontis</i>	UT	X	C	1		X	X					X	2.22
White River spinedace	<i>Lepidomeda albivallis</i>	NV	X	E	1		X	X					X	2.11
southern leatherside chub	<i>Lepidomeda aliciae</i>	UT	X		2		X						X	2.11
northern leatherside chub	<i>Lepidomeda copei</i>	ID, NV, UT, WY	X		1		X			X			X	2.00
Virgin spinedace	<i>Lepidomeda mollispinis mollispinis</i>	AZ, NV, UT	X		1	X	X				X			2.33
Big Spring spinedace	<i>Lepidomeda mollispinis pratensis</i>	NV	X	T	1		X	X			X			1.89
Little Colorado spinedace	<i>Lepidomeda vittata</i>	AZ	X	T	1	X	X				X			2.22
speckled chub	<i>Macrhybopsis aestivalis</i>	NM, TX			3	X	X					X		1.56
spikedace	<i>Meda fulgida</i>	AZ, NM	X	T	2		X				X			2.22

# Priority Actions

- Increase resources for “endemic, imperiled, and underserved” species and their habitats where existing management is insufficient to reverse declining status trends.
- Provide active support for on-the-ground projects to address desert fish habitat priorities.
- Build an expanded “partnership at large” of agencies, native American tribes, NGOs, landowners, and private industry to identify and implement projects to support the strategic planning priorities.
- Coordinate with other NFHP partnership efforts (e.g. ,Western Native Trout Initiative ).
- Integrate reporting and assessment with NFHAP Science and Data guidelines.

# Current Status of DFHP

- Recognized as a National Fish Habitat Partnership in March 2009
- Request for 2010 funding proposals was sent out in August; 20 proposals received; 3 funded
- At present, all partnership activities are completed by Steering Committee members on a volunteer basis
- Our wish for 2010 is to be able to hire a partnership Coordinator!

# Supporting on-the-ground Conservation Actions

- Candidate Partnership demonstration project grant received in May 2008 through FWS/National Fish Habitat Board (\$60K)



- Rehabilitation/restoration of Red Rock Cienega, New Mexico for Gila chub and Gila topminnow.

# Red Rock Cienega



**“Lakes Pasture” area of Red Rock Wildlife Area, prior to restoration, 2008**



**View from road, October 2009**

# Red Rock Cienega



Vegetation beginning to emerge. October 2009

# What's next?



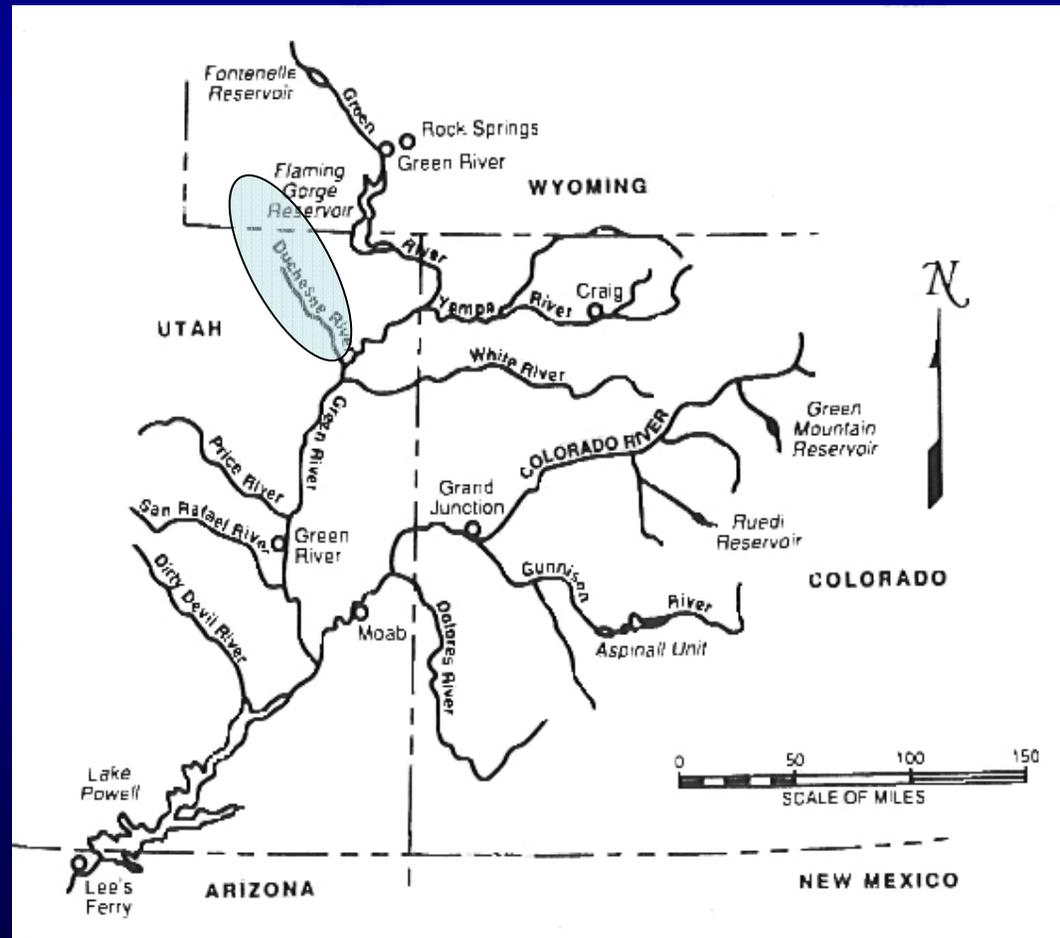
1. New Mexico Department of Game and Fish will work with Arizona Game and Fish Department and the U.S. Fish and Wildlife Service to establish populations of Gila topminnow and Gila chub, doubling the populations of these species in NM.
2. The cienega will provide habitat not only for the fish, but also for waterfowl and amphibians and increase the recreation value of the Wildlife Area.
3. An interpretive trail will provide educational opportunities for visitors.

# Projects Coming in 2010

- Myton Diversion Fish Passage

## DFHP Species of Concern

- Flannelmouth sucker (2.00)
- Roundtail chub (2.00)
- Bluehead sucker (1.89)
- Colorado pikeminnow (1.67)



# Building DFHP Success – What DFHP Needs:

**Science and Data:** Partners that are currently working on desert fish species and their habitats: share data that can be used to evaluate species trends and improve strategies for effective conservation.

**Ideas:** Partners to develop innovative conservation approaches to expedite progress in desert fish and habitat conservation.

**\$\$\$:** Partners to help us leverage time, money, and expertise to address the conservation needs of imperiled desert fishes

# Building DFHP Success

Join us!

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[http://www.nature.nps.gov/water/DFH\\_partnership.cfm](http://www.nature.nps.gov/water/DFH_partnership.cfm)

