Razorback Sucker *Xyrauchen texanus*
SSA & 5-year Review

Kevin McAbee
Upper Colorado River Recovery Program

Glen Canyon Dam AMP Technical Work Group **March 14, 2019**

Evaluating Species Status: SSA Framework

Spend More Time on Science
Improve Transparency & Consistency

Supports diverse USFWS documents

Species Status Assessment

- Species Needs
- Current Condition
- Future Condition

USFWS Decision Analysis

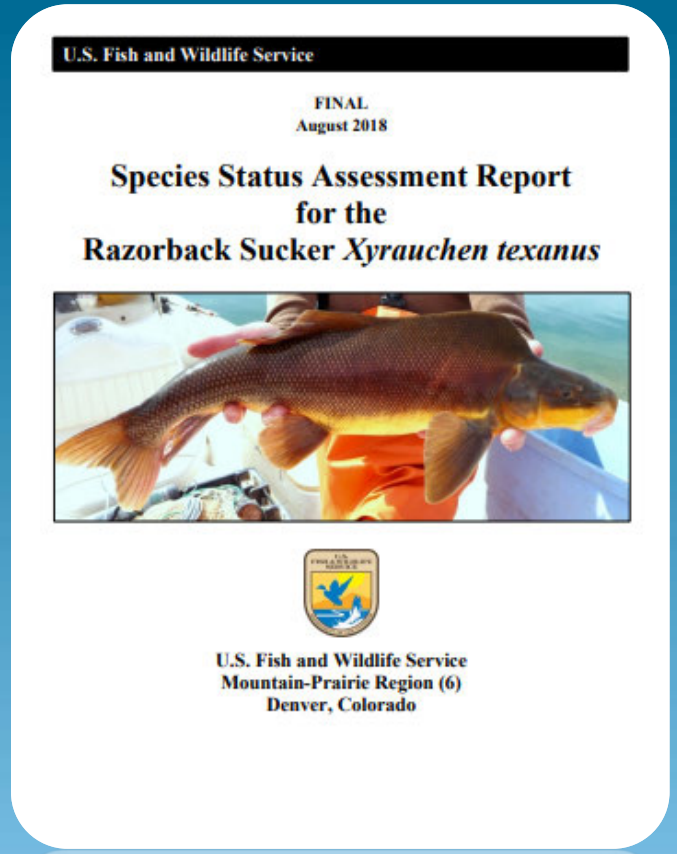
5-year Review

Input from States, Species Experts, & Peer Review

Separation of Science and Policy

Razorback Sucker SSA Timeline

- Initiated 2016
- Delphi Process – spring 2016
  Species Expert Input
- Drafts 2016 & 2017
- Futures Scenarios - January 2018
  Science Team
- Peer Review – Summer 2018
- Stakeholder Review – Summer 2018
- Published - September 2018


U.S. Fish and Wildlife Service

FINAL
August 2018

Species Status Assessment Report
for the
Razorback Sucker *Xyrauchen texanus*

U.S. Fish and Wildlife Service
Mountain-Prairie Region (6)
Denver, Colorado

[Upper Colorado River Endangered Fish Recovery Program - Recovery Goals]

3 Stages of SSAs

SPECIES NEEDS

Current Availability or Condition of those Needs

Future Availability or Condition of those Needs

Razorback Sucker Species Needs

Ch. 3

Primary Resource Categories

1. Complex lotic and/or lentic habitat
2. Suitable water temperature and quality
3. Variable flow regimes in lotic systems
4. Adequate food supply
5. Range and connectivity
6. Adequate Population size
7. Multiple interconnected, naturally recruiting, and resilient populations
8. Genetic diversity

Various Individual, Population, and Species Needs

Stressors and Conservation Impacting Species Needs

Ch. 4

Management-based species

Risks/Stressors

- Nonnative predation
- Habitat – flow regime
- Nonnative competition
- Nonnative/Invasive effects on habitat
- Water Temperature
- Climate Change
- Land Use
- Inbreeding (reductions in diversity)
- Heavy metals
- Hybridization
- Parasites and diseases
- Contaminant spills
- Runoff pollution
- Overutilization

Conservation Actions

- Water management
- Recovery program funding
- Augmentation programs
- Nonnative removal
- Research and Monitoring

Lower Colorado River Multi-Species Conservation Program

Upper Colorado River Endangered Fish Recovery Program

San Juan River Basin Recovery Implementation Program

Glen Canyon Dam Adaptive Management Program

Condition of Species Needs

Ch. 5

	Physical Needs					
	Complex Habitat					
	Habitat	Nonnative presence in habitat	Adequate food	Water Quality /Temperature	Variable flow (lotic only)	Range & Connect-ivity
High						
Medium						
Low						
Extirpated						

	Demographic Needs					
	Adult population size (wild + stocked fish)	Spawning and Larval Presence	Recruitment	Dependence on Stocking	Genetic Integrity	Population Stability (wild recruited adults)

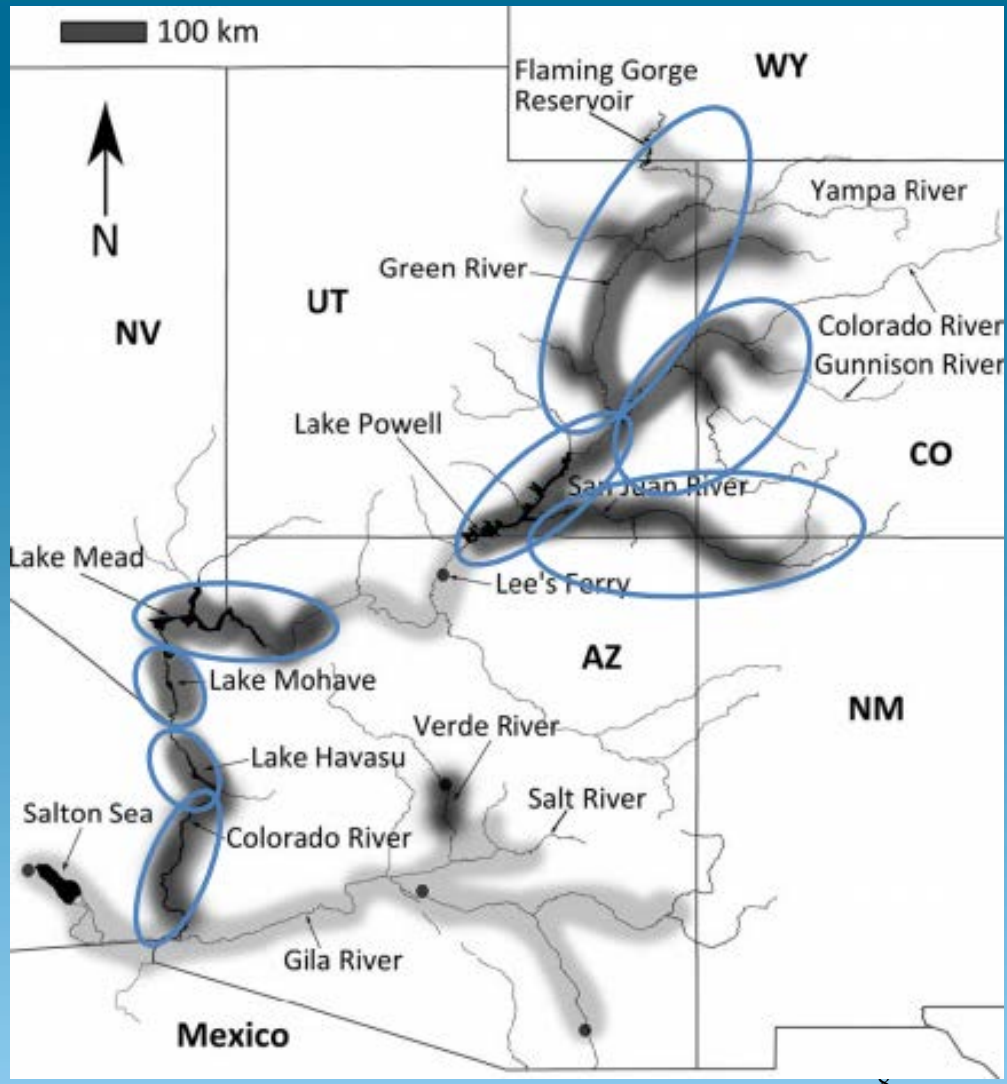
Razorback Sucker Populations

Upper Basin

- Green River subbasin
- Colorado River subbasin
- San Juan River subbasin
- Lake Powell

Lower Basin

- Lake Mead (& Grand Canyon)
- Lake Mohave
- Lake Havasu
- Colorado below Parker Dam



Current Condition: Physical Needs

Ch. 5

Population	Physical Needs					
	Complex Habitat		Water Quality/Temp	Variable flow (lotic only)	Adequate Food	Range & Connectivity
	Habitat	Nonnative presence in habitat				
Green River Subbasin						
Colorado River Subbasin						
San Juan River Subbasin						
Lake Powell						
Lake Mead						
Grand Canyon						
Lake Mohave						
Lake Havasu						
Colorado Mainstem Below Parker Dam						

Current Condition: Demographics

Ch. 5

Population	Demographics					
	Adult population	Spawning and larval Presence	Recruitment	Dependence on Stocking	Genetic integrity	Population Stability
Green River Subbasin						
Colorado River Subbasin						
San Juan River Subbasin						
Lake Powell						
Lake Mead (and Grand Canyon)						
Lake Mohave						
Lake Havasu						
Colorado Mainstem Below Parker Dam						

Razorback Sucker Current Condition

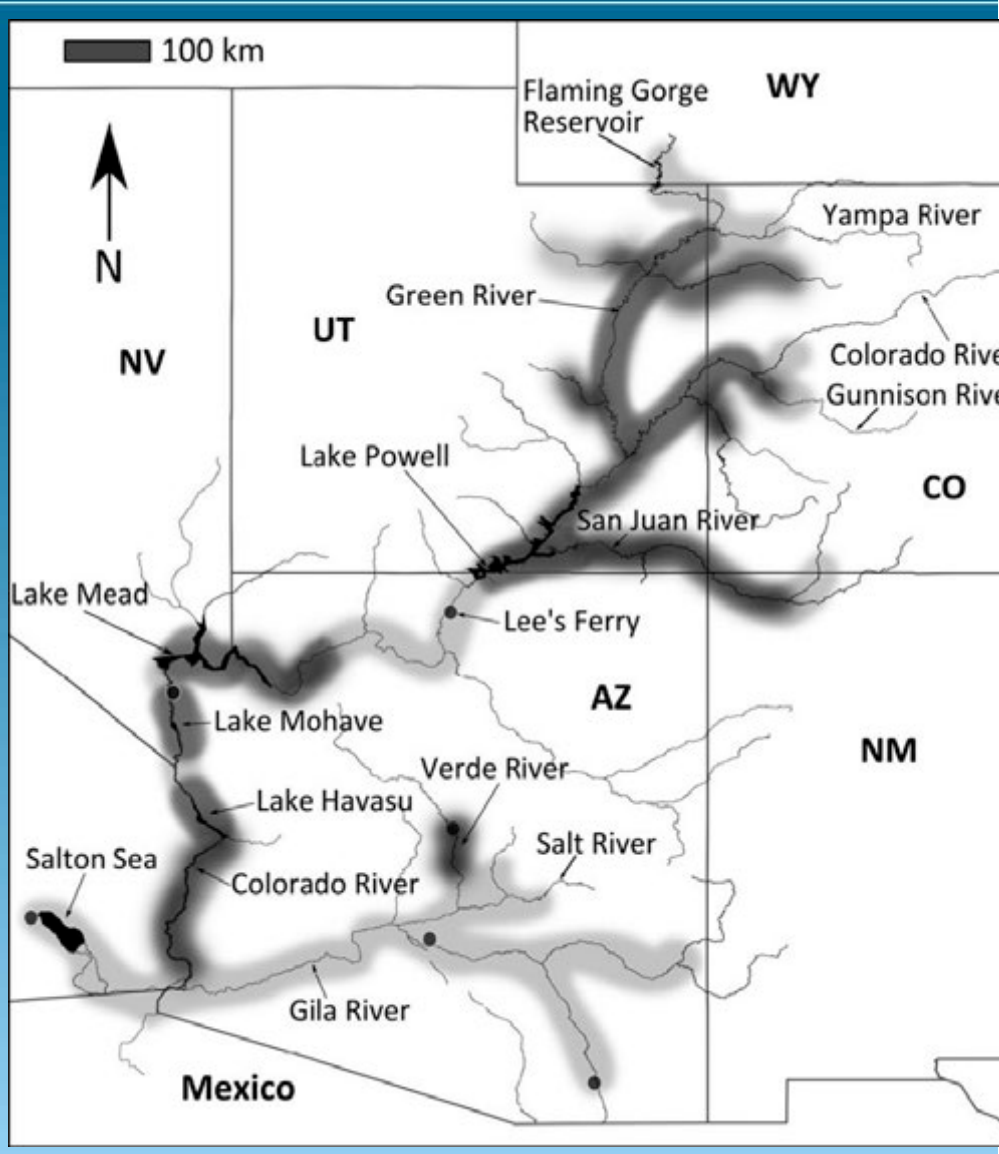
Ch. 5

Upper Basin

- Green River subbasin
- Colorado River subbasin
- San Juan River subbasin
- Lake Powell

Lower Basin

- Lake Mead (& Grand Canyon)
- Lake Mohave
- Lake Havasu
- Colorado below Parker Dam



3 Stages of SSAs

SPECIES NEEDS

Current Availability or Condition of those Needs

CURRENT SPECIES' CONDITION

Future Availability or Condition of those Needs

SPECIES' FUTURE CONDITION

Razorback Sucker
Plausible Future Scenarios

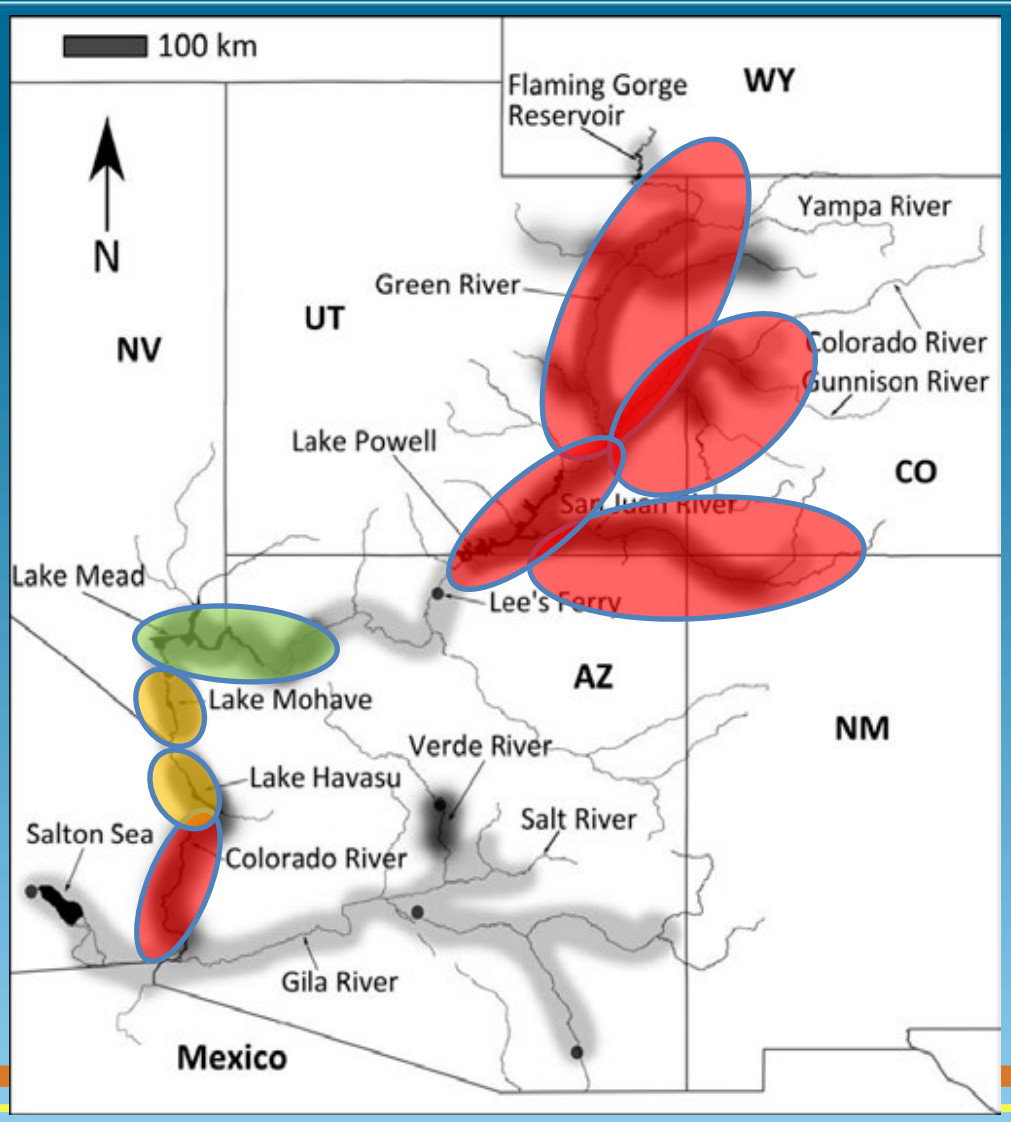
Ch. 6

- Science Team created 5 plausible future scenarios
- Assumed climate change is likely to increase water temperature and reduce water availability
- Chose management based scenarios because of the importance of management for the species
- Considered likelihood of each over 30 and 100 years

Plausible Future Scenario 1

Ch. 6

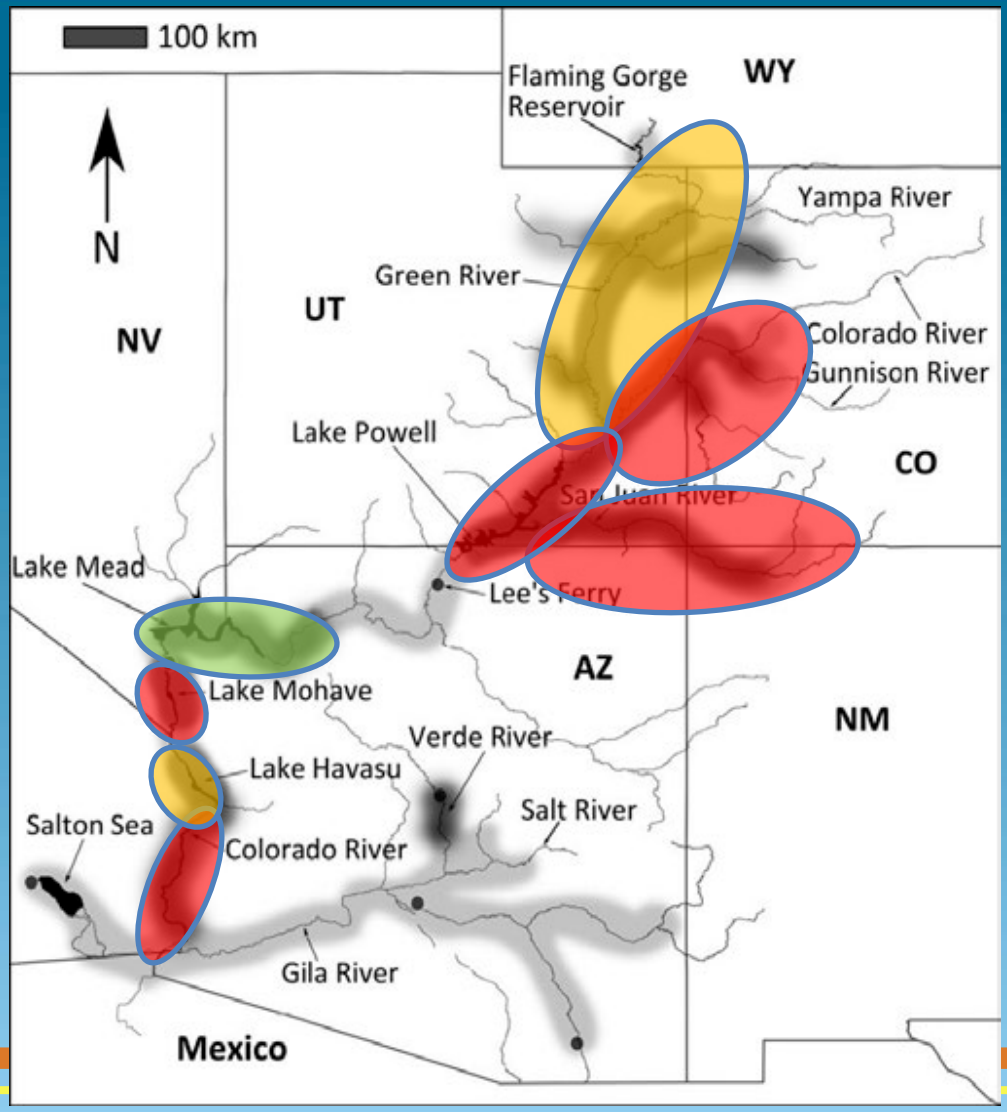
Dramatic reduction in recovery / conservation actions



Plausible Future Scenario 2

Ch. 6

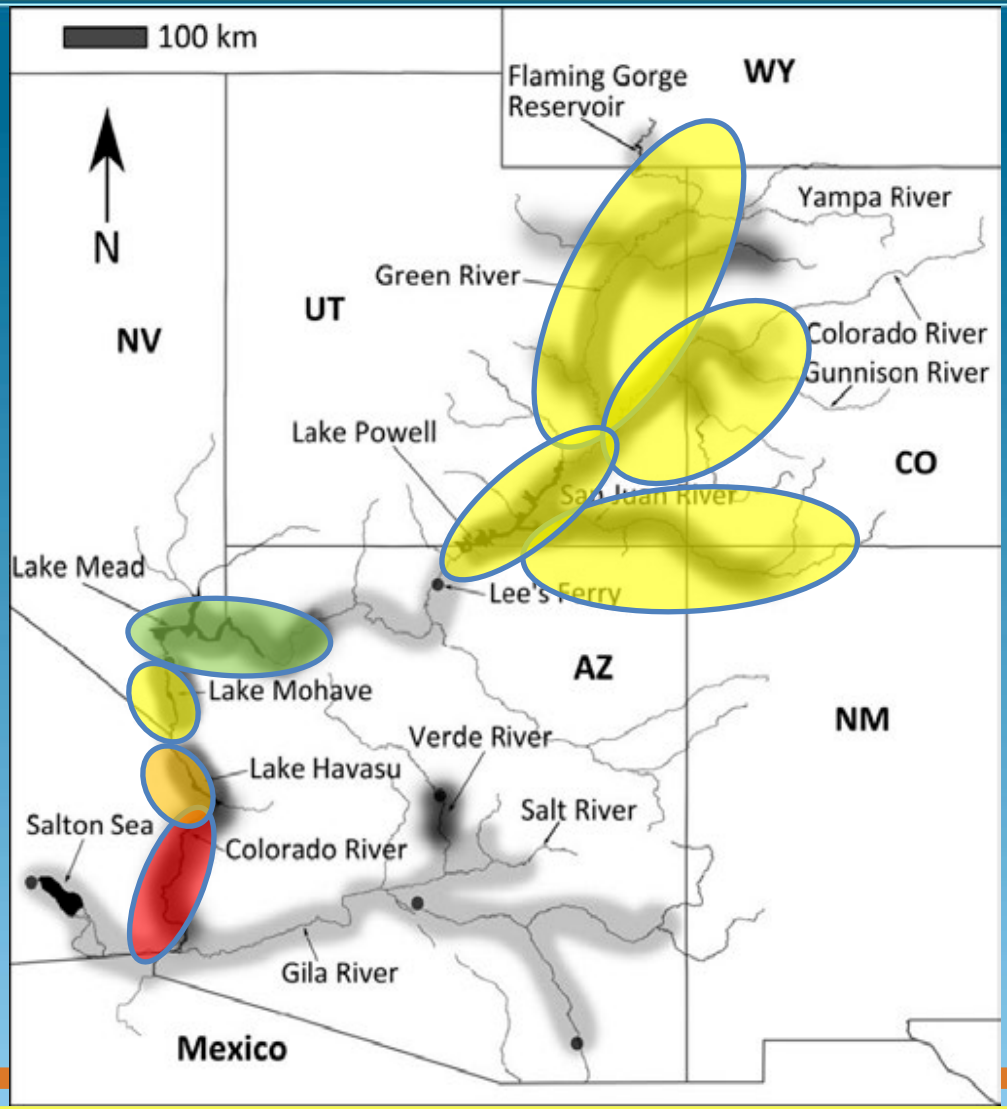
Constant level of effort, lower effectiveness of stocking success



Plausible Future Scenario 3

Ch. 6

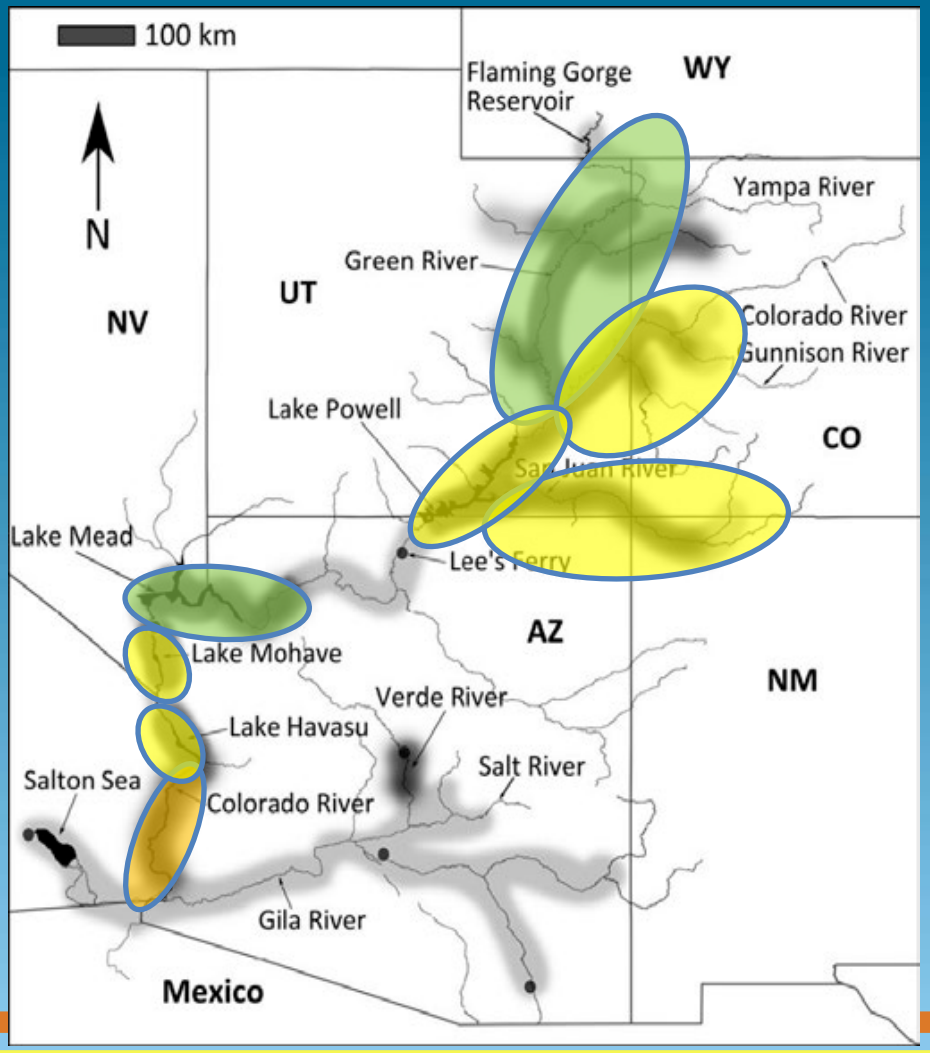
Status quo (continued level of effort and effectiveness)



Plausible Future Scenario 4

Ch. 6

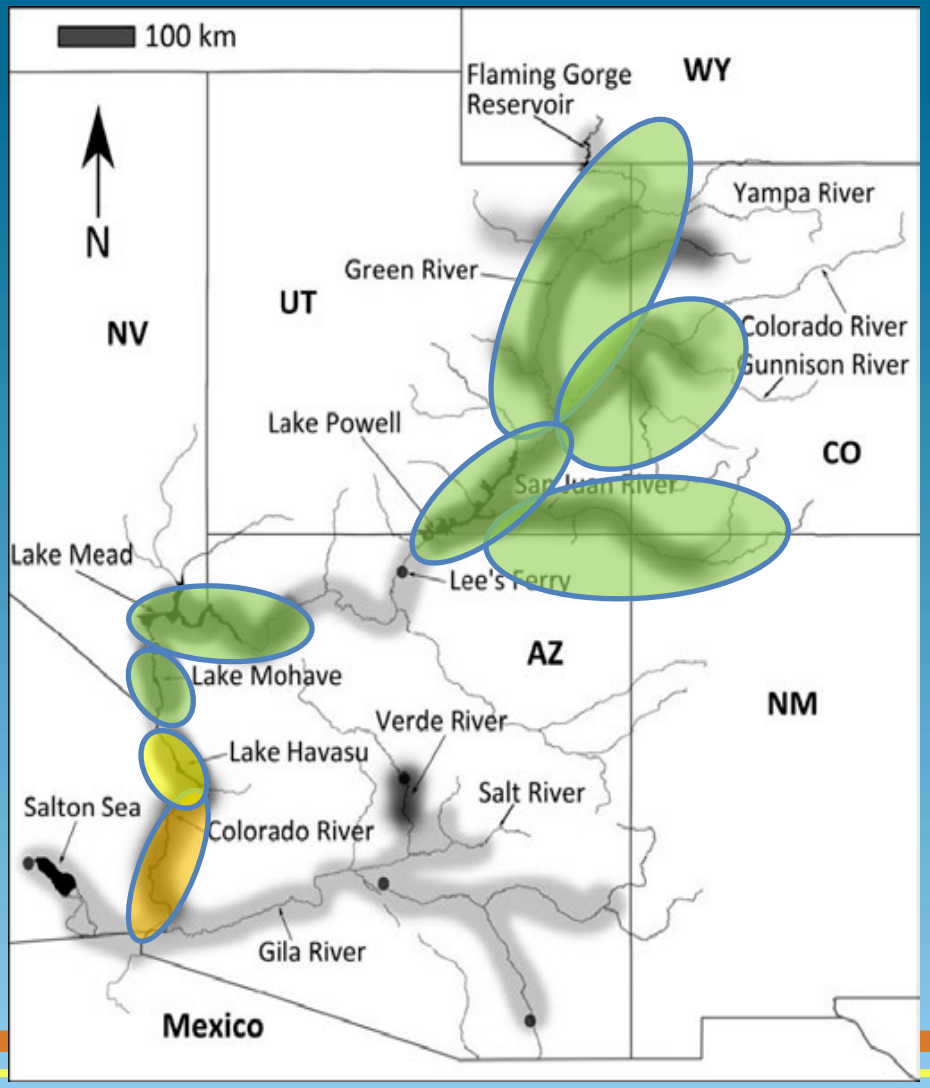
Continued effort leading to increased success (supports recruitment)



Plausible Future Scenario 5

Ch. 6

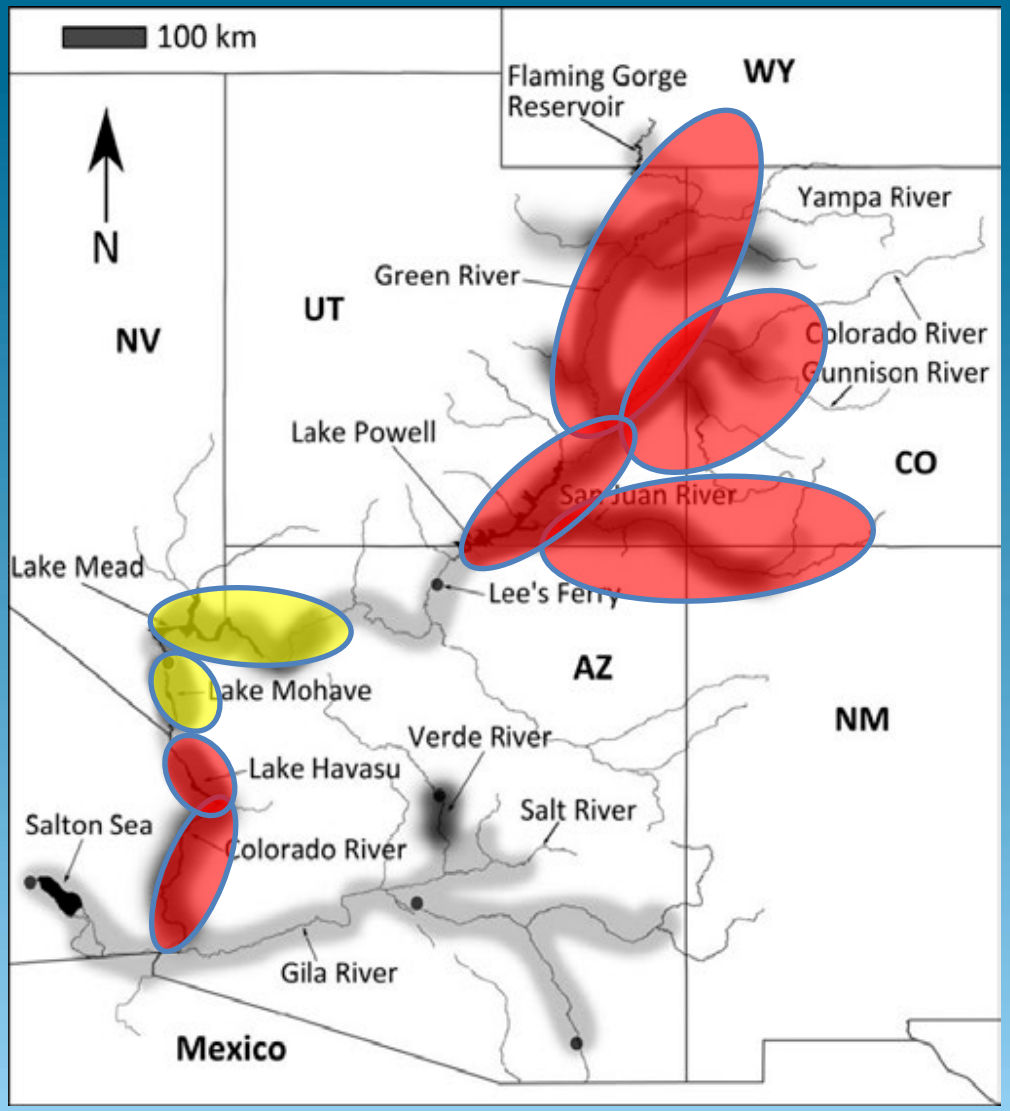
Continued effort with more effective techniques



Razorback Sucker Historic Condition

Ch. 5

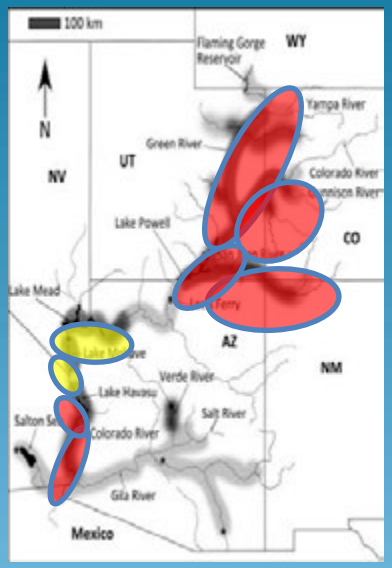
- 30 years ago
- Initiation of management actions



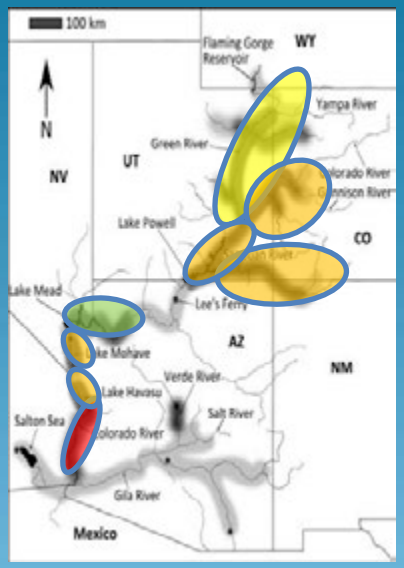
Razorback Sucker Condition Over Time

Ch. 6

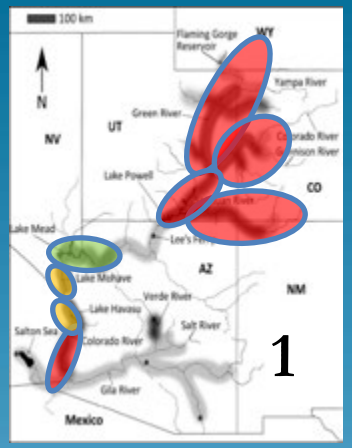
Historic

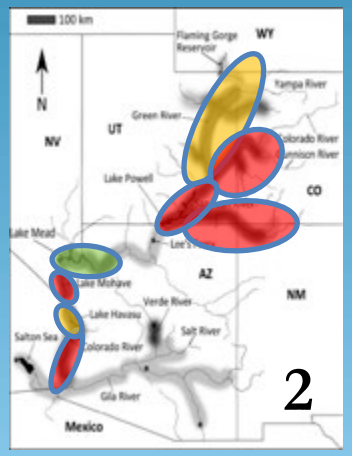


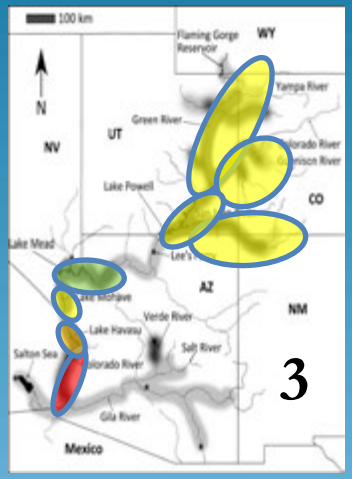
Current

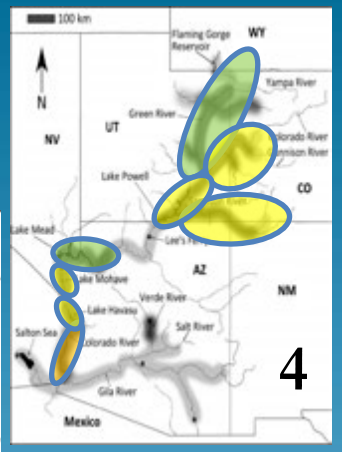


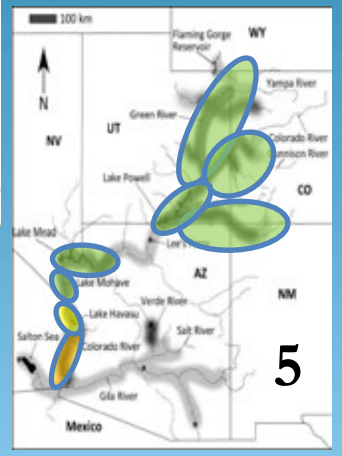
Futures







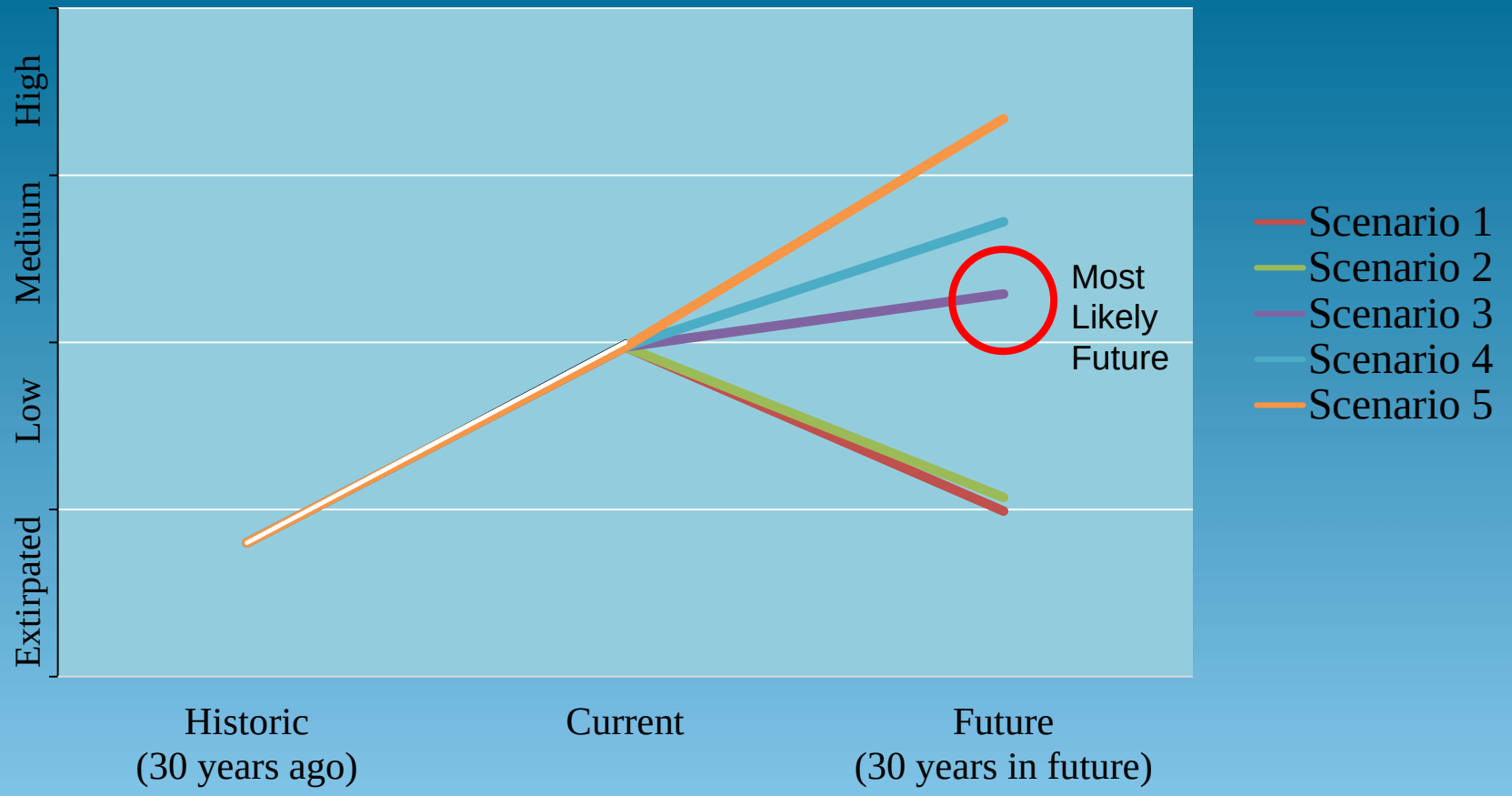




Razorback Sucker Condition Over Time

Ch. 6

Predictions of Future Conditons in All Populations



USFWS Decision: 5-year Review

The U.S. Fish and Wildlife Service is required to review the status of each federally listed species every five years.

- **Endangered Species:** A species in danger of extinction throughout all or a significant portion of its range

- **Threatened Species:** species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

- The key statutory difference between a threatened species and an endangered species is the timing of when a species may be in danger of extinction, either **now** (endangered species) or **in the foreseeable future** (threatened species).

Razorback Sucker
5-year Review

- **Endangered Species:** A species in danger of extinction throughout all or a significant portion of its range (now)

- Widely distributed: 8 population centers; Rivers and lakes
- Numerous adults: 50,000+ hatchery produced adults in system
- Successful stocking: Long-lived adults occupy habitats far from stocking locations
- Adapting to wild: Adults are spawning in many locations
- Incomplete life history: Wild recruitment is extremely rare
- Management dependent: Populations (except Lake Mead) are highly dependent on hatchery augmentation, flows, floodplain habitat, & nonnative fish control
- Commitment: sustained management was the most likely future scenario.

- Therefore, the USFWS concluded that the Razorback Sucker does not meet the definition of an endangered species.

Razorback Sucker 5-year Review

- **Threatened Species:** species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

- Incomplete life history: Without significant natural recruitment, adult populations depend entirely on continued captive propagation to persist into the future
- Stressors remain in place: stressors to viability, such as nonnative fish, are not fully controlled
- Management dependent: uncertainty and risk associated with the continuation and effectiveness of management actions remain

- Therefore, the USFWS concluded that the Razorback Sucker does meet the definition of an threatened species.

Next Steps

The USFWS is committed to follow through on the recommendations

Status change is a federal rulemaking

- ***Proposed rule*** **to reclassify razorback sucker as threatened**
- **Receive public comments on proposed rule**
- **Final Rule considers public comments and all information**

Revise recovery plan

- **If reclassified, recovery plan would only include de-listing criteria**

Next Steps
Razorback Sucker

Document	Expected Date
SSA	completed in 2018
5 Year Recommendation	completed in 2018
Proposed Dowlisting & 4(d) Rule	(in draft) Sept. 2019
Receive Public Comments	60 days from publish
Final Rule	~1 year later (2020)
Recovery Plan Revision	~2021

What about Humpback chub?

USFWS is finalizing a proposed downlisting with 4(d) rule

Humpback Chub Proposed Downlisting Rule: Overview

We propose to reclassify the humpback chub from endangered to threatened and issue a species specific 4(d) rule

- 5-year review (March 2018) provided the recommendation
- Analyses supported by SSA (March 2018)
- Recovery Goals (2002) are considered in the proposed rule, but outdated; Revised Recovery Plan to follow rulemaking
- Species specific 4(d) rule included, which exempts take for certain actions to aid in conservation and recovery

Humpback Chub Regulatory Schedule

Document	Expected Date
SSA	completed in 2018
5 Year Recommendation	completed in 2018
Proposed Downlisting & 4(d) Rule	(in draft) May 2019
Receive Public Comments	60 days from publish
Final Rule	~1 year later (2020)
Recovery Plan Revision	~2020

Thank You – Questions?

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What is a 4(d) rule?

Section 4(d) of the ESA

- Section 4(d) of the ESA, which directs the Service to issue regulations deemed "necessary and advisable to provide for the conservation of threatened species."

What this means

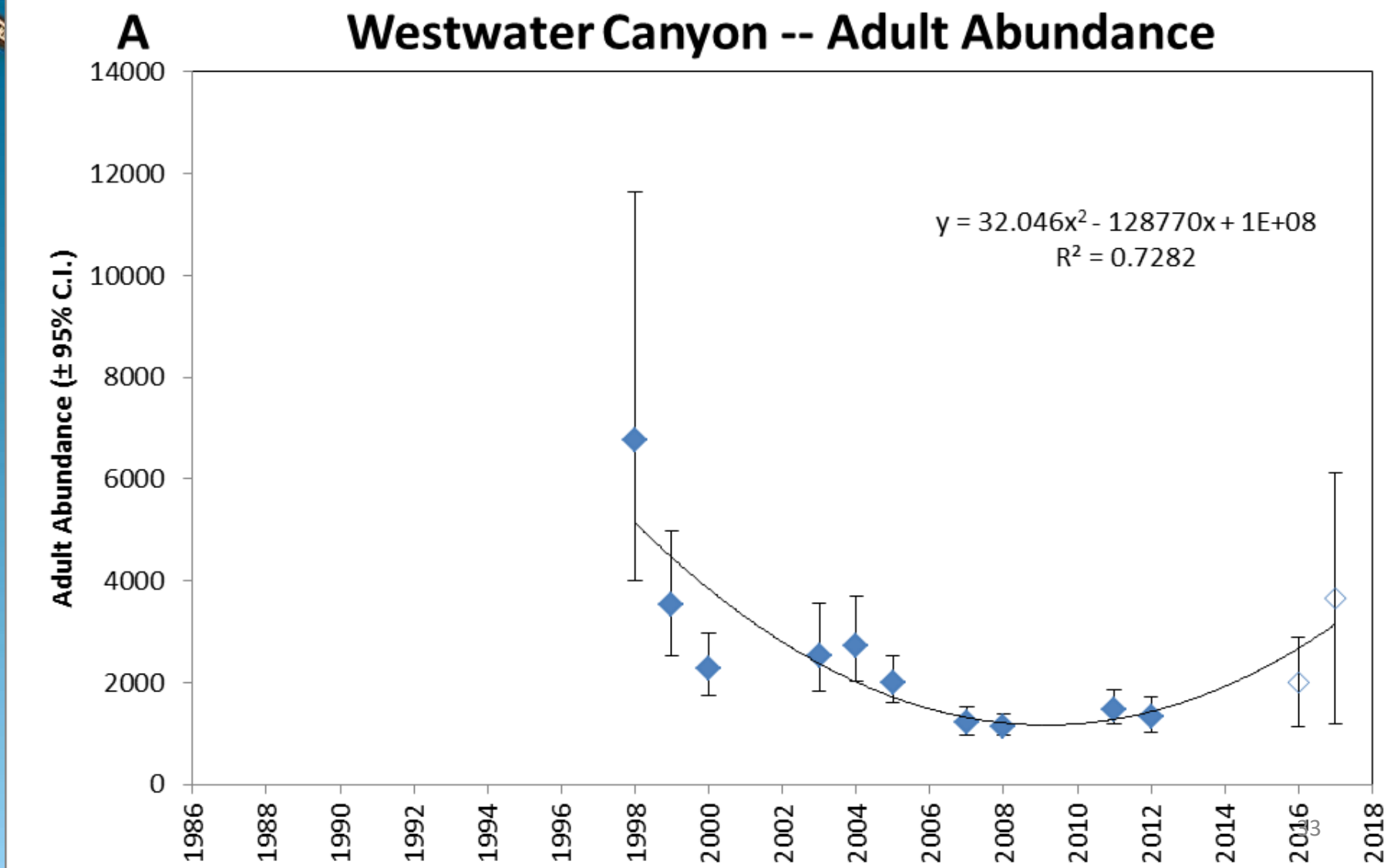
- Incentivize positive conservation actions
- Streamline the regulatory process for minor impacts
- Clarify/simplify what forms of take of
  are and are not prohibited

Status of Upper Basin Humpback Chub Demographics

- Blacks Rocks & Westwater Canyon
  - Declines through 2007;
  - Subsequent stabilization
- Desolation / Gray canyons
  - Unclear abundance estimates trend
    - Point estimates decline but CI overlap
  - CPUE apparently stable over ~30 years
- Cataract Canyon
  - Persistent at low abundance; CPUE variable
- Dinosaur National Monument
  - Extirpated but potential for translocations

Westwater Canyon

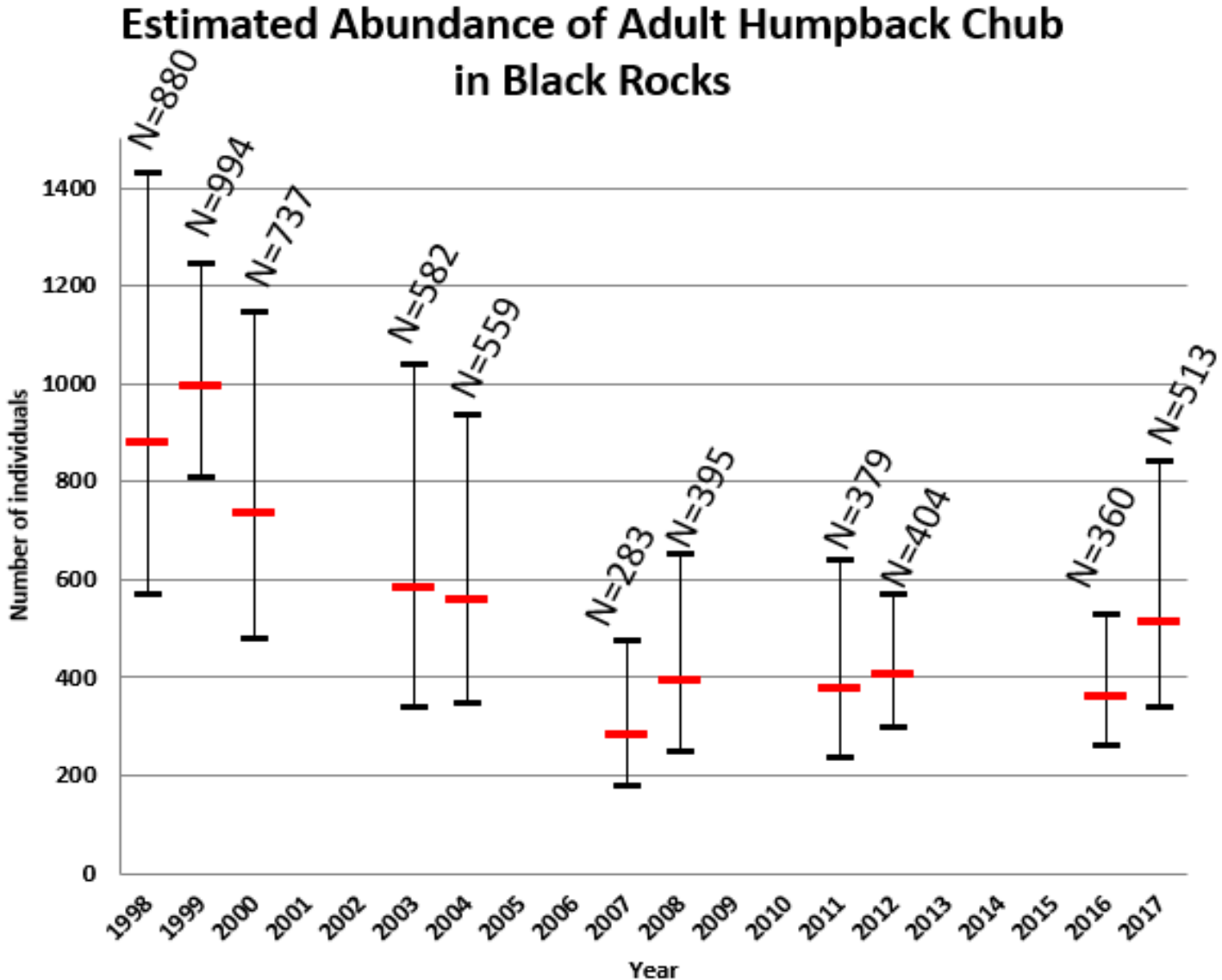
Hines 2018



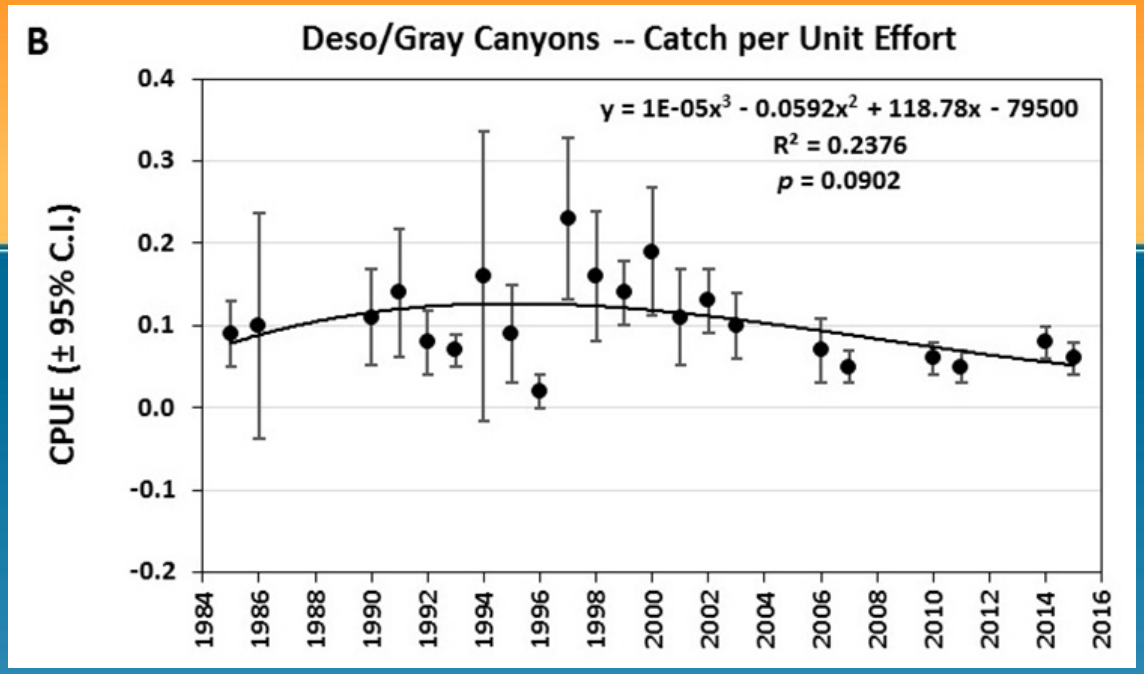
Black Rocks

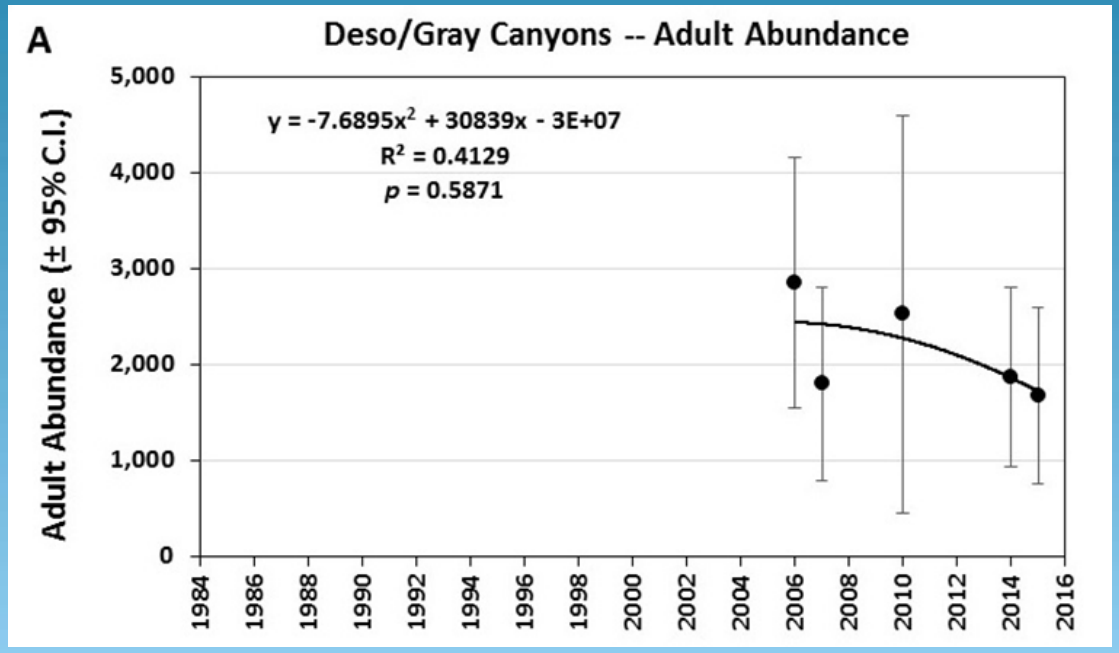
2016 and 2017 data preliminary)

Francis et al. 2018



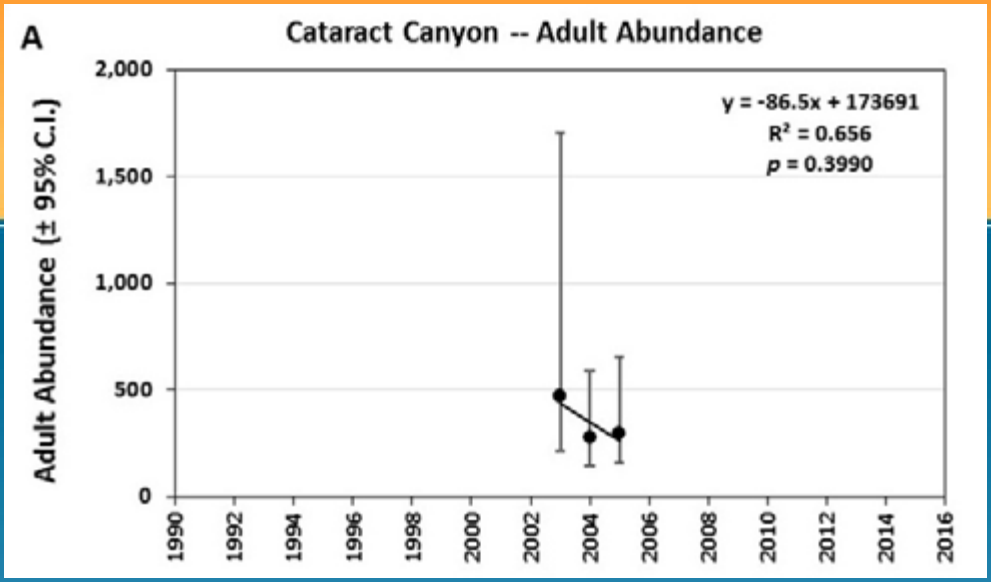
Desolation / Gray Canyons





Howard and Caldwell 2018

Cataract Canyon



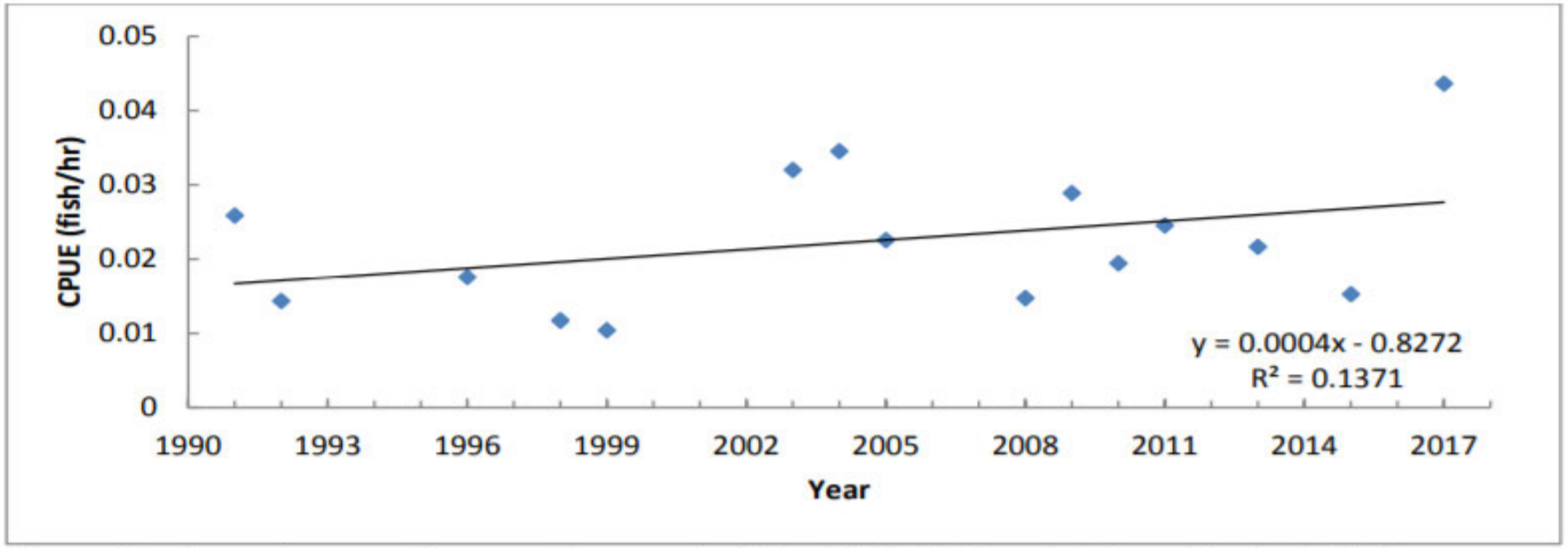
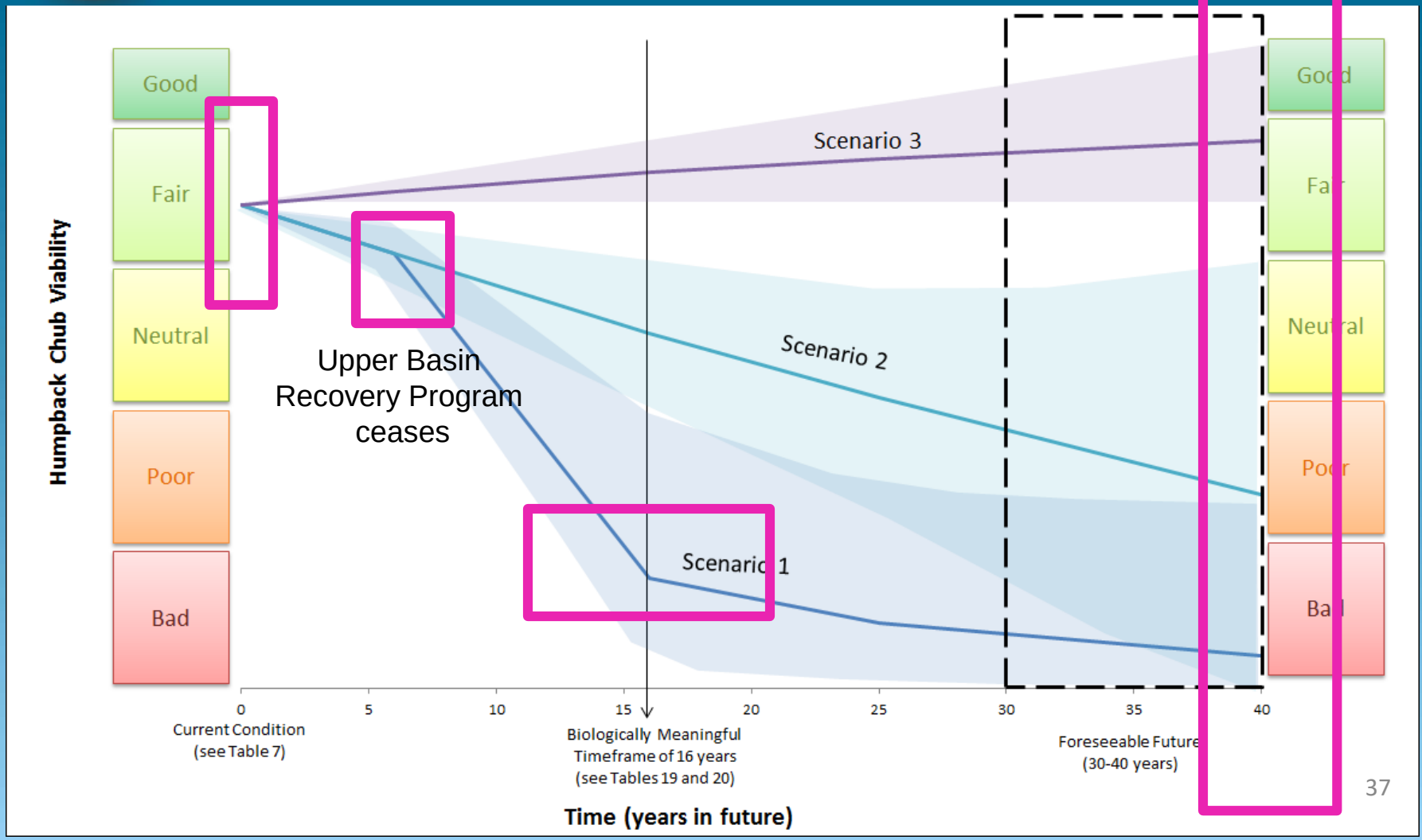


Figure 3. Annual trammel net catch per unit effort (CPUE) for adult humpback chubs in Cataract Canyon, 1991 – 2017.

Ahrens 2017

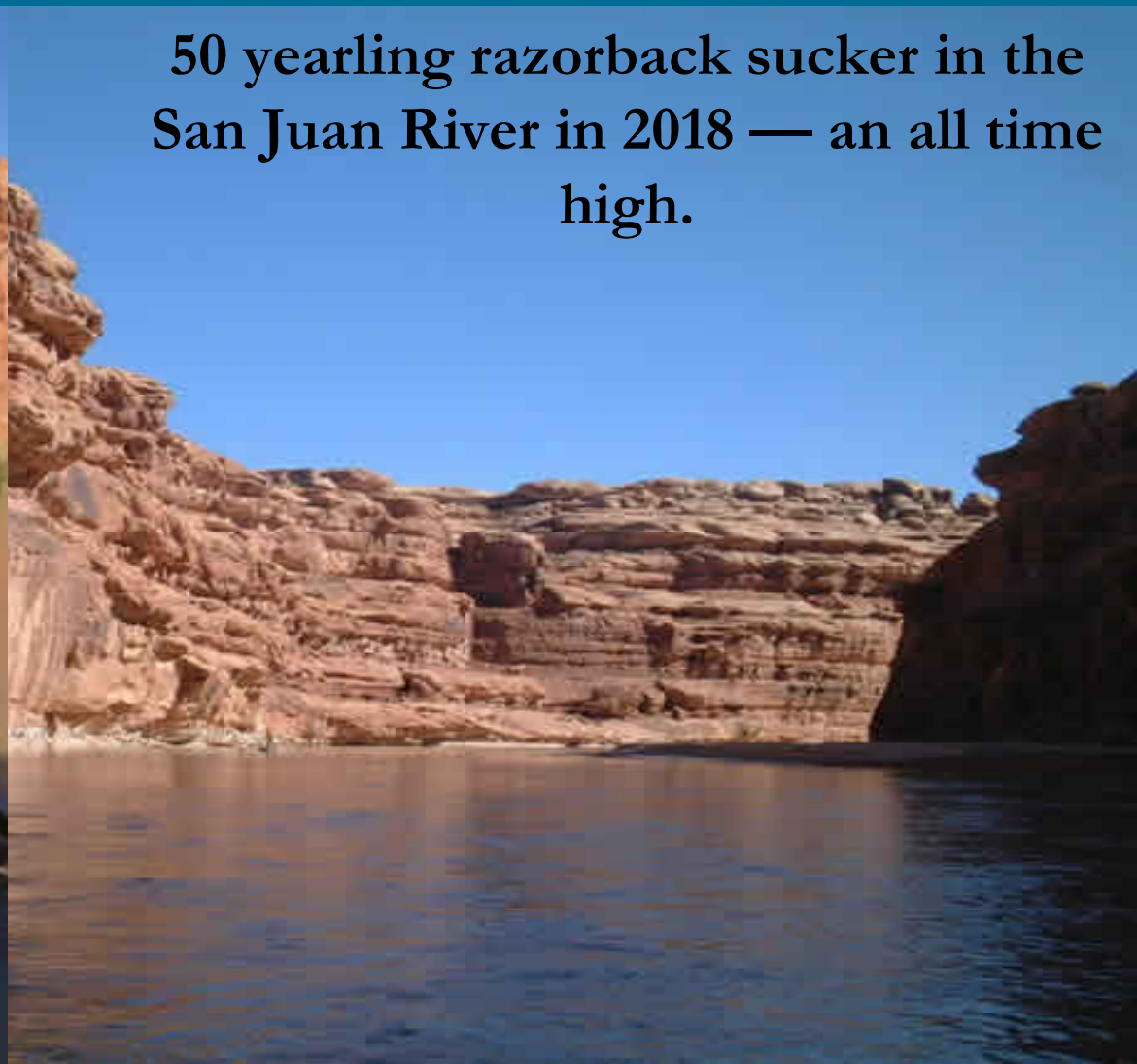
Humpback Chub Current and Future Condition

SSA Ch. 5.0



Continued Progress: San Juan Razorback Sucker

50 yearling razorback sucker in the San Juan River in 2018 — an all time high.



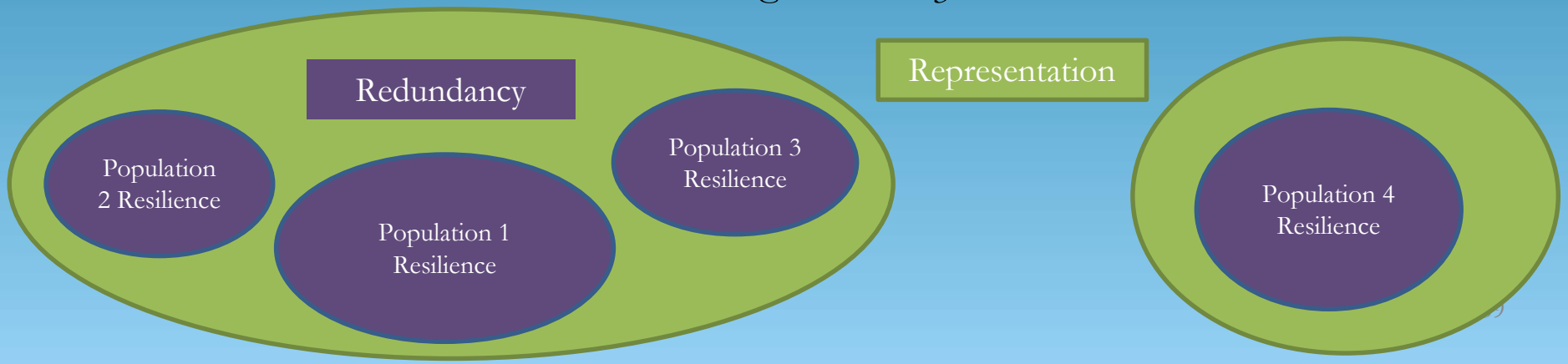
SSAs Assess Species' Viability

Viability is the ability of a species to sustain populations in the wild beyond a biologically meaningful time frame.

Resiliency – the ability of the populations to withstand stochasticity
> *Population health, abundance, growth rate, etc.*

Redundancy – the ability of the species to withstand catastrophic events
> *Number and distribution of populations*

Representation – the ability of the species to adapt to changing environmental conditions
> *Genetic and ecological diversity*



Razorback Sucker SSA Technical Input

FWS Lead

Upper Colorado River Recovery Program

- Julie Stahli

Science Team for Scenario Development

–Paul Badame – Utah
–Shane Capron – WAPA
–Pete Cavalli – Wyoming
–Tom Chart – UCRRP
–Harry Crockett – Colorado
–Scott Durst – San Juan RIP
–Mark Grover – Arizona
–Jess Gwinn – FWS R2 ES
–Mark McKinstry – USBR
–Dale Ryden – FWS R6 FAC
–Brandon Senger – Nevada
–David Speas – USBR
–Jim Stolberg – LCR MSCP
–Melissa Trammell – NPS
–David Vigil – California
–Matt Zeigler – New Mexico

Razorback Sucker
SSA Preparation & Review

Writing Team

UCRRP

- –Julie Stahli
- –Tom Chart
- –Kevin McAbee

BIO-WEST

- –Brandon Albrecht
- –Ron Kegerries
- –Sean Keenan
- –Harrison Mohn
- –Ron Rogers

Peer Review

- –Koreen Zelasko - CSU
- –Summer Burdick - USGS
- –Robert Schelly – NPS

Stakeholder Review

- – Upper Colorado and San Juan Recovery Programs' Biology Committees
- – Tribal Partners
- – Lower Basin Programs' Representatives (identified by R2)

Reviews Received

- –State of Colorado
- –State of Arizona
- –State of New Mexico
- –Brian Kesner
- –Paul Marsh
- –Chuck Minckley
- –Tom Wesche
- –Dave Speas
- –R2 Fisheries
- –Tom Dowling
- –Bill Stewart
- –San Juan Program
- –Tom Pitts
- –Scott Vanderkooi