Humpback Chub *Gila cypha* SSA & 5-year Review

Kevin McAbee

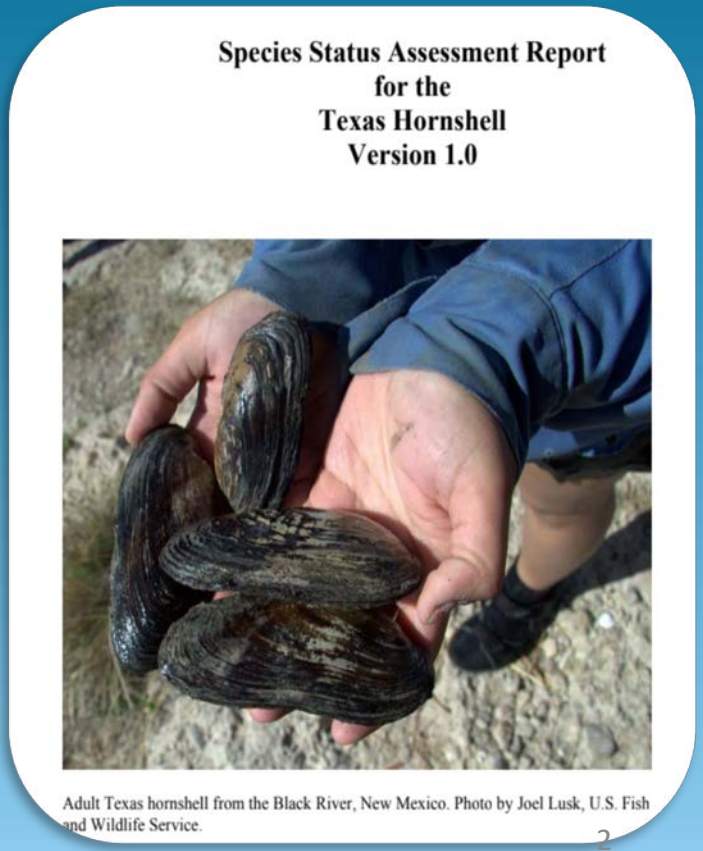
Upper Colorado River
Endangered Fish Recovery Program

Glen Canyon Dam AMP Technical Work Group April 23, 2018

Species Status Assessment

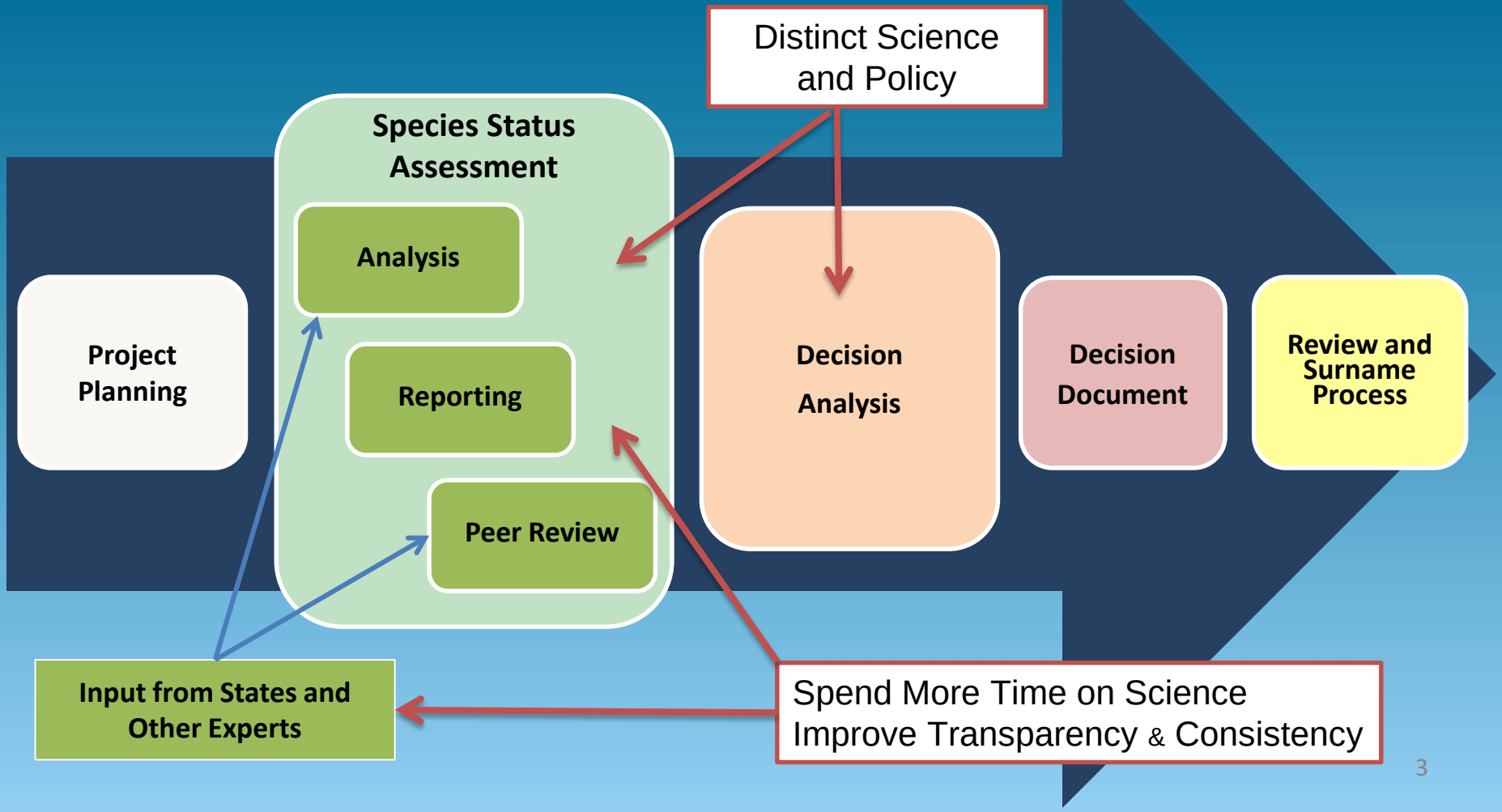
U.S. Fish and Wildlife Service's Improved Endangered Species Act Assessment Process

- Spend More Time on Science
- Useful for Multiple Decisions/Programs
- Improve Transparency & Consistency
- Distinct Science and Policy
- Increase Conservation through Collaboration
- Cope with Synergistic Factors
- Improve Forecasting



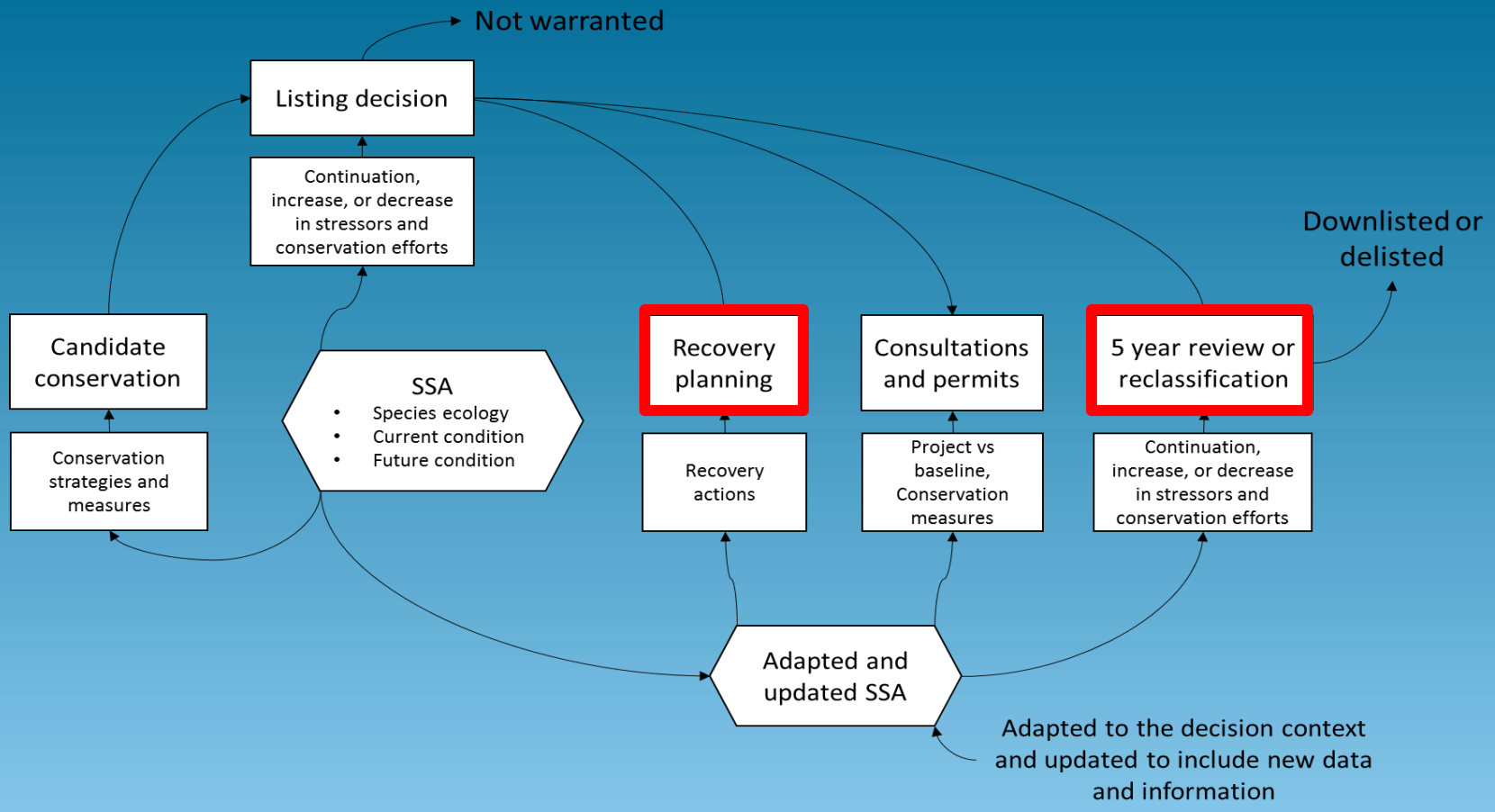
Species Status Assessment

SSA Work Flow



Species Status Assessment

Useful for Multiple decisions/programs



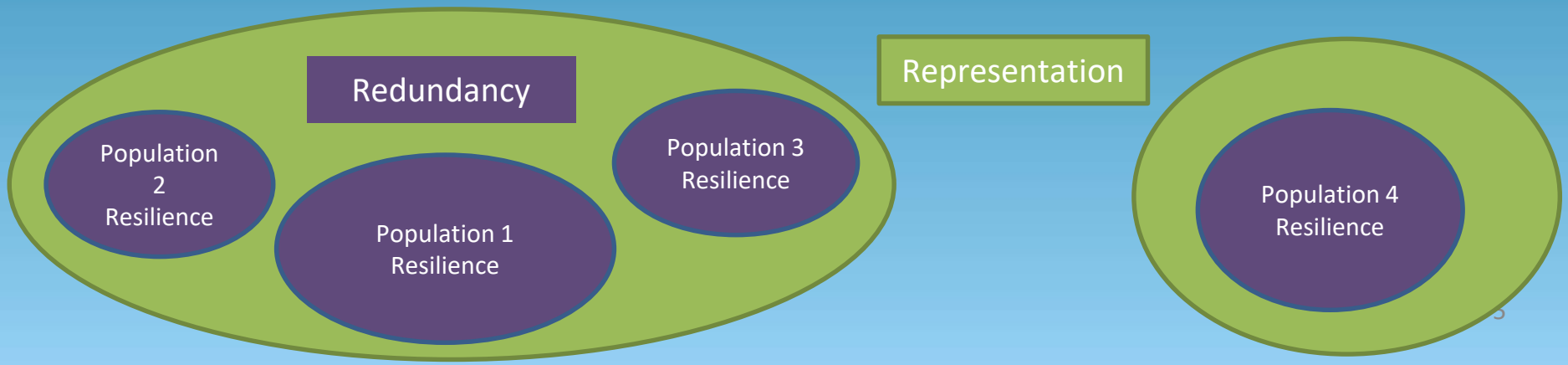
Species Status Assessment

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



Species Status Assessment

SSA has 3 Stages:

SPECIES NEEDS

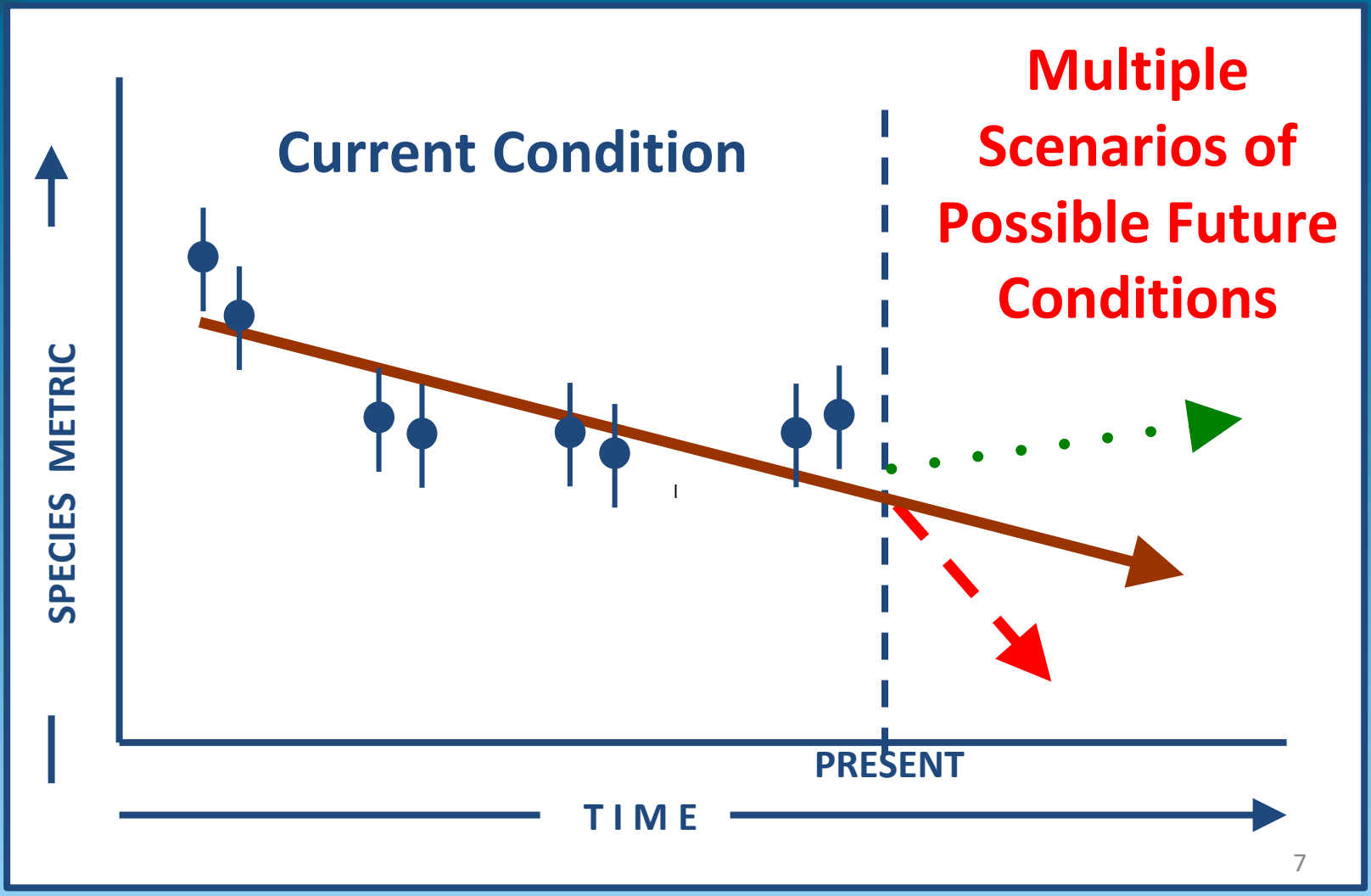
Current Availability or Condition of those Needs

CURRENT SPECIES' CONDITION

Future Availability or Condition of those Needs

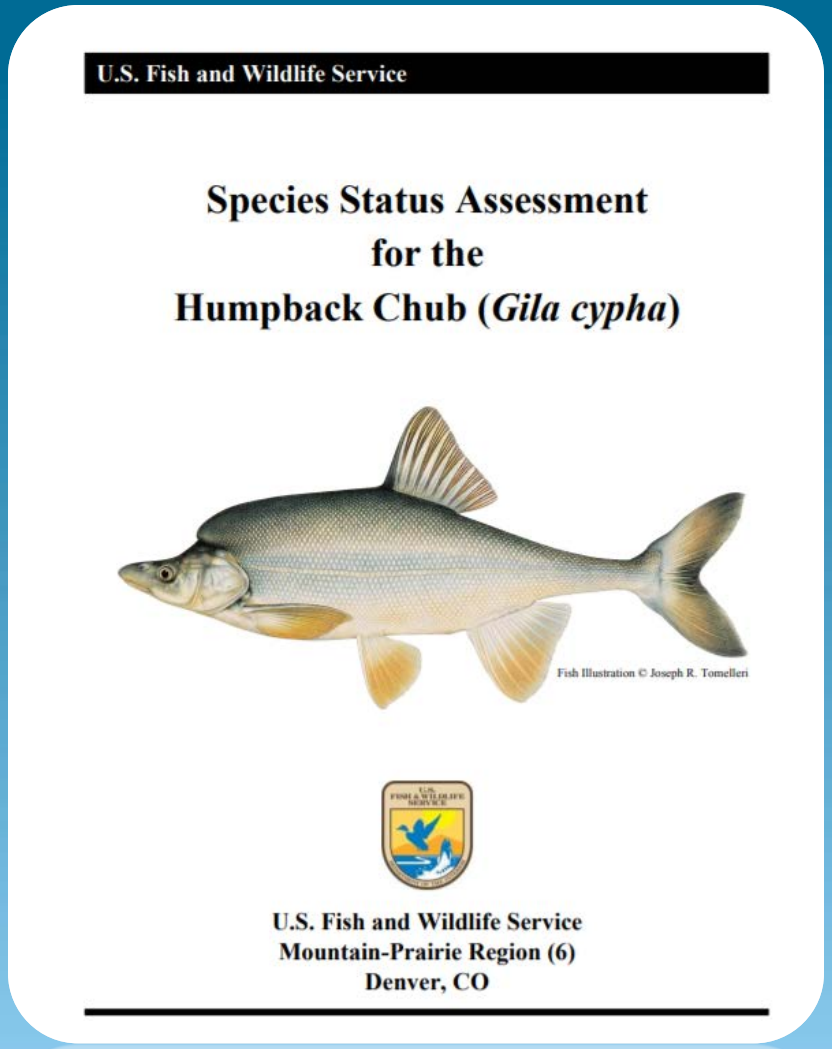
FUTURE SPECIES' CONDITION

Future Conditions



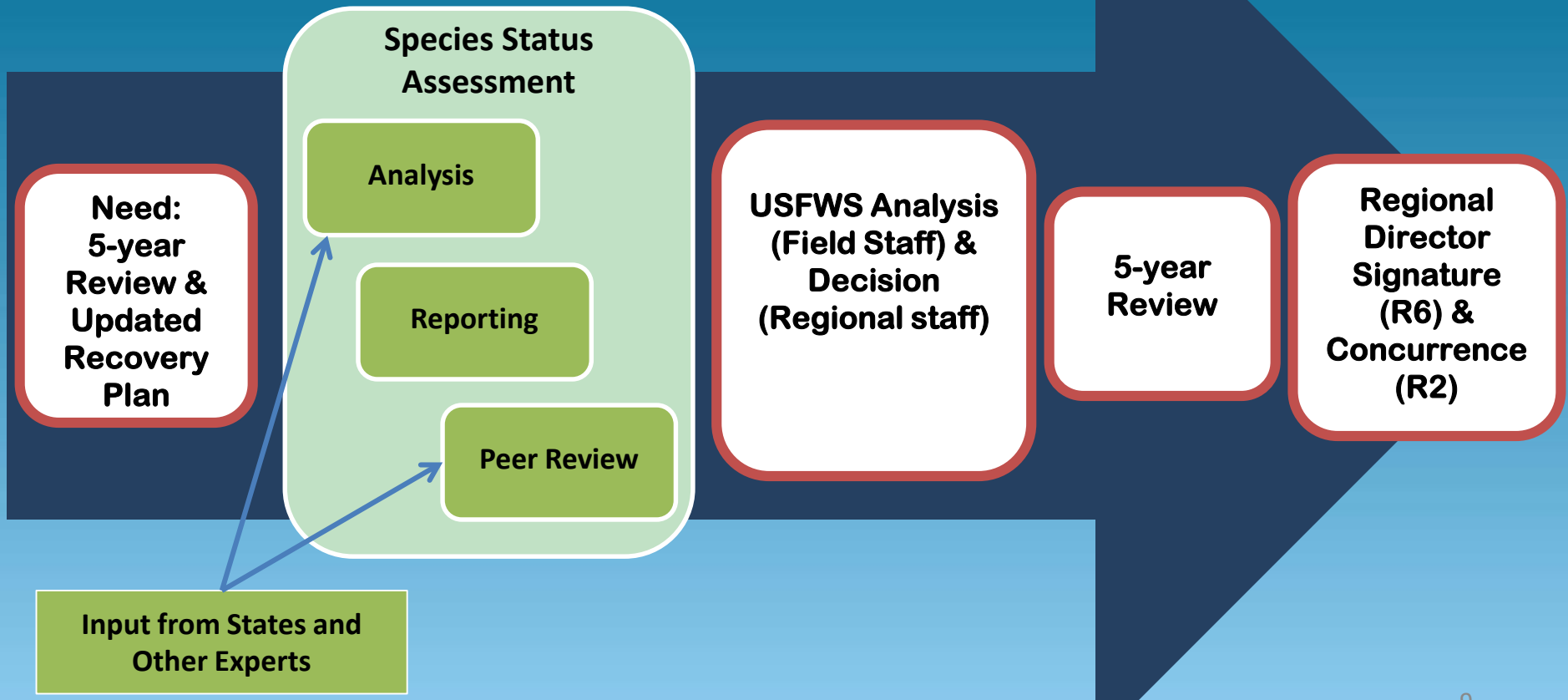
Humpback Chub SSA

- Initiated November 2015
- 8 drafts
- Final Draft November 2017
- Published March 2018



Humpback Chub SSA

SSA Work Flow



Humpback Chub SSA

Input from States and Other Experts

Species Status Assessment

- **Analysis**
- **Reporting**
- **Peer Review**

Recovery Team Leader:
Richard Valdez, Ph.D. (SWCA, Environmental Consultants)

Science Advisory Subgroup:
Shane Capron (Western Area Power Administration)
Katherine Creighton (Utah Division of Wildlife Resources)
David Rogowski, Ph.D. replaced Bill Stewart (Arizona Game and Fish Department)
Melissa Trammell (National Park Service)
Scott Vanderkooi (USGS, Grand Canyon Monitoring and Research Center)
Kirk Young / Randy Van Haverbeke (U.S. Fish and Wildlife Service, Region 2)

Nov 2015 to Nov 2017

Implementation Subgroup:
Rob Billerbeck (National Park Service)
Julie Carter (Arizona Game and Fish Department)
Leslie James (Colorado River Energy Distributors Association)
Lynn Jeka (Western Area Power Administration)
Michelle Garrison replaced Ted Kowalski (Colorado Water Conservation Board)
Henry Maddux (Utah Department of Natural Resources)
Don Ostler (Upper Colorado River Commission)
Tom Pitts (Water Consult)
Brent Uilenberg (U.S. Bureau of Reclamation)
Robert Wigington (The Nature Conservancy)
Kim Yazzie (Navajo Nation Department of Fish and Wildlife)
To be announced (Pueblo of Zuni)

Mid 2016 to Mid 2017

Peer Reviewers:
Paul Badame (Utah Division of Wildlife Resources)
Brian Healy (NPS, Grand Canyon National Park)
Craig Paukert, Ph.D. (Missouri Cooperative Fish and Wildlife Research Unit)

Early 2018

Additional Review, Advice, and Comment:
Bill Pine, Ph.D. (University of Florida, Gainesville)
Sarah Rinkevich (U.S. Fish and Wildlife Service, Region 2)
Jessica Gwinn (U.S. Fish and Wildlife Service, Region 2)
Shaula Hedwall (U.S. Fish and Wildlife Service, Region 2)
Marjorie Nelson (U.S. Fish and Wildlife Service, Region 6)
Travis Francis (U.S. Fish and Wildlife Service, Region 6)
Chuck Minckley (U.S. Fish and Wildlife Service, Region 2, retired)
Peggy Roefer (Colorado River Commission)
Dale Ryden (U.S. Fish and Wildlife Service, Region 6)
George Weekley (U.S. Fish and Wildlife Service, Region 6)
Craig Hansen (U.S. Fish and Wildlife Service, Region 6)

Mid 2016 to Mid 2017

Humpback Chub SSA

SSA has 3 Stages:

SPECIES NEEDS

Current Availability or Condition of those Needs

CURRENT SPECIES' CONDITION

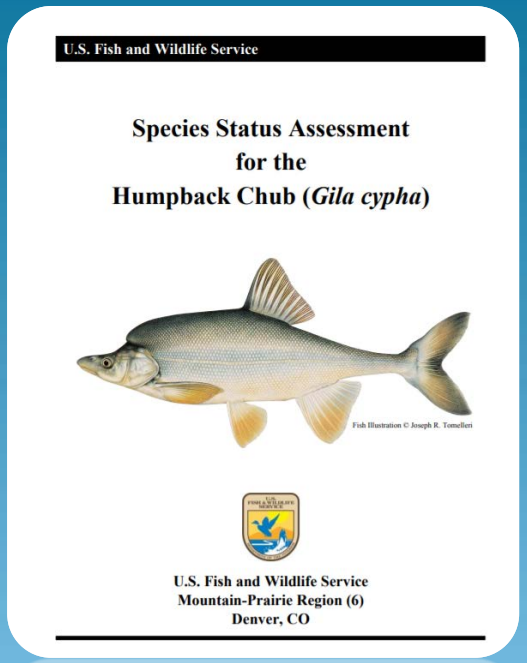
Future Availability or Condition of those Needs

FUTURE SPECIES' CONDITION

Chapter 3

Chapter 4

Chapter 5



U.S. Fish and Wildlife Service

Species Status Assessment
for the
Humpback Chub (*Gila cypha*)

Fish Illustration © Joseph R. Tomelleri

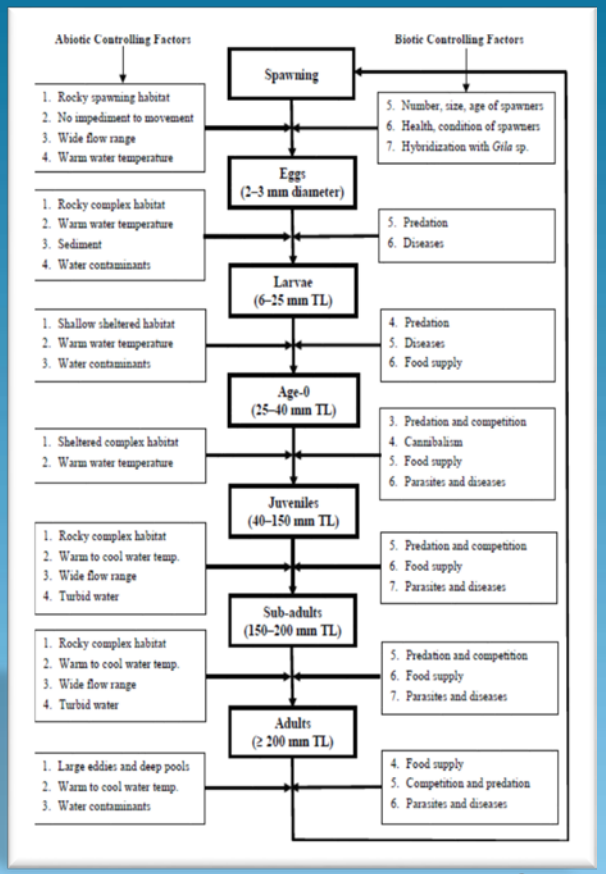
U.S. Fish and Wildlife Service
Mountain-Prairie Region (6)
Denver, CO

Humpback Chub Species Needs

Ch. 3

Primary Resource Categories

1. Diverse rocky canyon river habitat
2. Suitable river flow and temperature
3. Adequate and reliable food supply
4. Habitat with few nonnative predators and competitors
5. Suitable water quality
6. Unimpeded range and connectivity
7. Persistent populations
8. High genetic diversity



Humpback Chub Populations

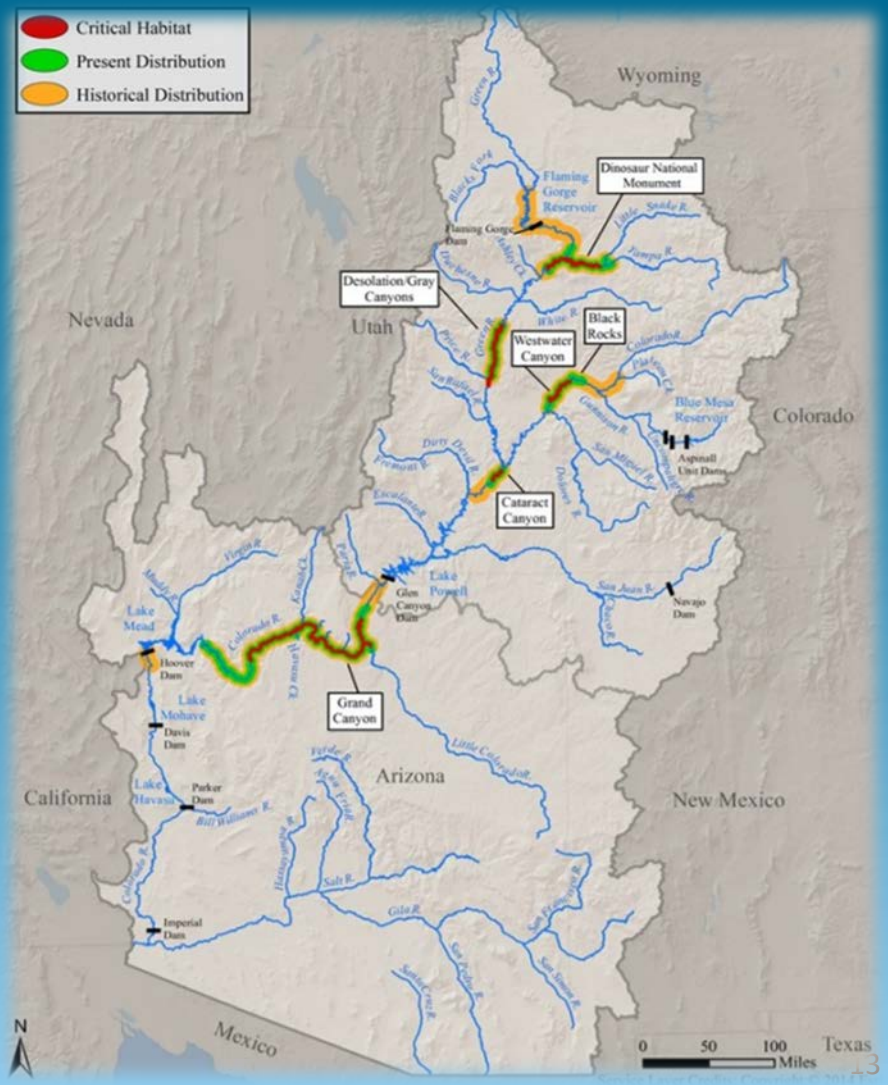
Ch. 2.2

Upper Basin

- Blacks Rocks
- Westwater Canyon
- Desolation / Gray canyons
- Cataract Canyon
- Dinosaur NM (extirpated)

Lower Basin

- Grand Canyon
  - Core Little Colorado River
  - Mainstem aggregations
  - Havasu Creek translocation
  - Western Grand Canyon



Current Resource Conditions

Ch. 4.3

Resource Category	Upper Basin					Lower Basin
	Black Rocks	Westwater Canyon	Desolation/ Gray canyons	Cataract Canyon	Dinosaur National Monument	Grand Canyon
	Extant				Extirpated	Extant
1. Diverse rocky canyon river habitat						
2a. Suitable flow						
2b. Suitable temperature						
3. Adequate and reliable food supply						
4. Habitat with few nonnative predators and competitors						
5. Suitable water quality						
6. Unimpeded range and connectivity						
7. Persistent populations						
8. High genetic diversity						

Table 7: Please refer to SSA for detailed information

Status of Upper Basin Demographics

Ch. 4.5

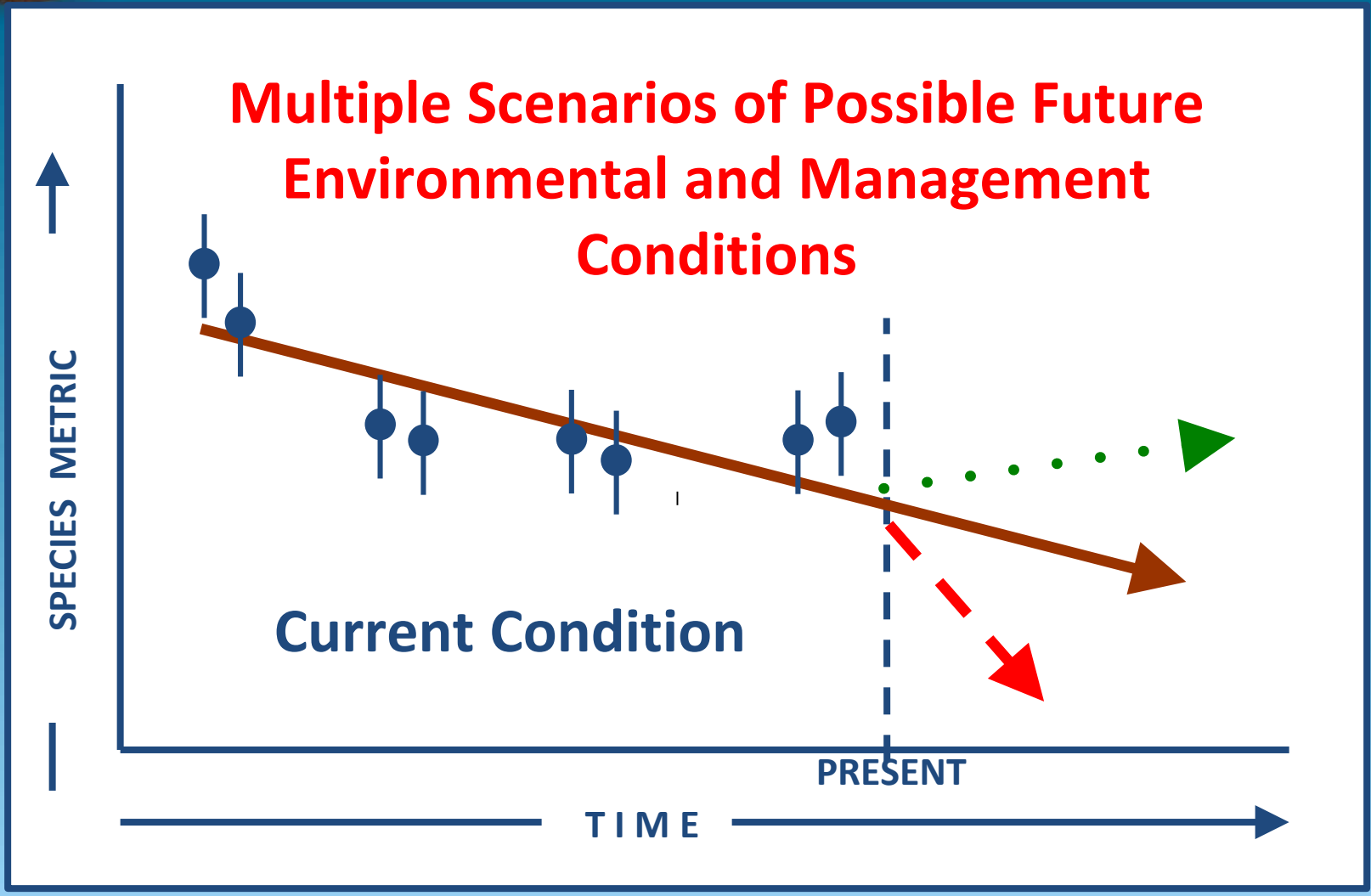
- Blacks Rocks & Westwater Canyon
  - Declines through 2007;
  - Apparent subsequent stabilization
- Desolation / Gray canyons
  - Unclear abundance estimates trend
    - Point estimates decline but CI overlap
  - CPUE apparently stable over ~30 years
- Cataract Canyon
  - Persistent at low abundance;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

Status of Lower Basin Demographics

Ch. 4.5

- Grand Canyon
  - Core population ~11,500 adults
    - stable since 2008
    - growth in 2000s
  - Mainstem: ~250 adults
    - several hundred younger
    - reproduction in western GC
  - Successful translocation efforts
    - LCR and Havasu

Future Conditions



Future Conditions

Ch. 5

- Biologically Meaningful Timeframe: 16-years

- Risks and Uncertainties
  - Reduced Water Availability
  - Predation and Competition by Nonnative Fish
    - Nonnative fish colonization of Humpback Chub habitats
  - Population Trajectory Uncertainties
    - Still Declining vs Recently Stabilizing
  - Efficacy and Intensity of Management Actions
    - Are Programs doing enough or appropriate actions?

Future Conditions

Ch. 5.3

Three potential future scenarios created by FWS and evaluated by the Science Advisors

- S1: Environmental Stressors Increase and New or Discretionary Extralegal Actions are Eliminated

  (Upper Basin Recovery Program ends in 2023)

- S2: Legally Mandated Management Actions and Additional Adaptive Management Actions Occur, but are Ineffective

- S3: Legally Mandated Management Actions and Adaptive Management Actions Occur, and Are Effective

Future Conditions

Tables 16, 17, & 18: Please refer to SSA for more details

Ch. 5.3

Resource	Scenario 1: Details Found in Table 16						Scenario 2: Details Found in Table 17						Scenario 3: Details Found in Table 18					
	BR	WW	DG	CC	DNM	GC	BR	WW	DG	CC	DNM	GC	BR	WW	DG	CC	DNM	GC
1.Canyon																		
2a.Flow																		
2b.Temp																		
3.Food																		
4.NNF																		
5.Water Quality																		
6.Range & conn																		
7.Persist. Pops																		
8.Genetic																		

Viability

Ch. 6

		Resiliency	Redundancy	Representation
Upper Basin	S1			
	S2			
	S3			
Lower Basin	S1			
	S2			
	S3			

- Viability is more tenuous in the upper basin than in the lower basin

Viability

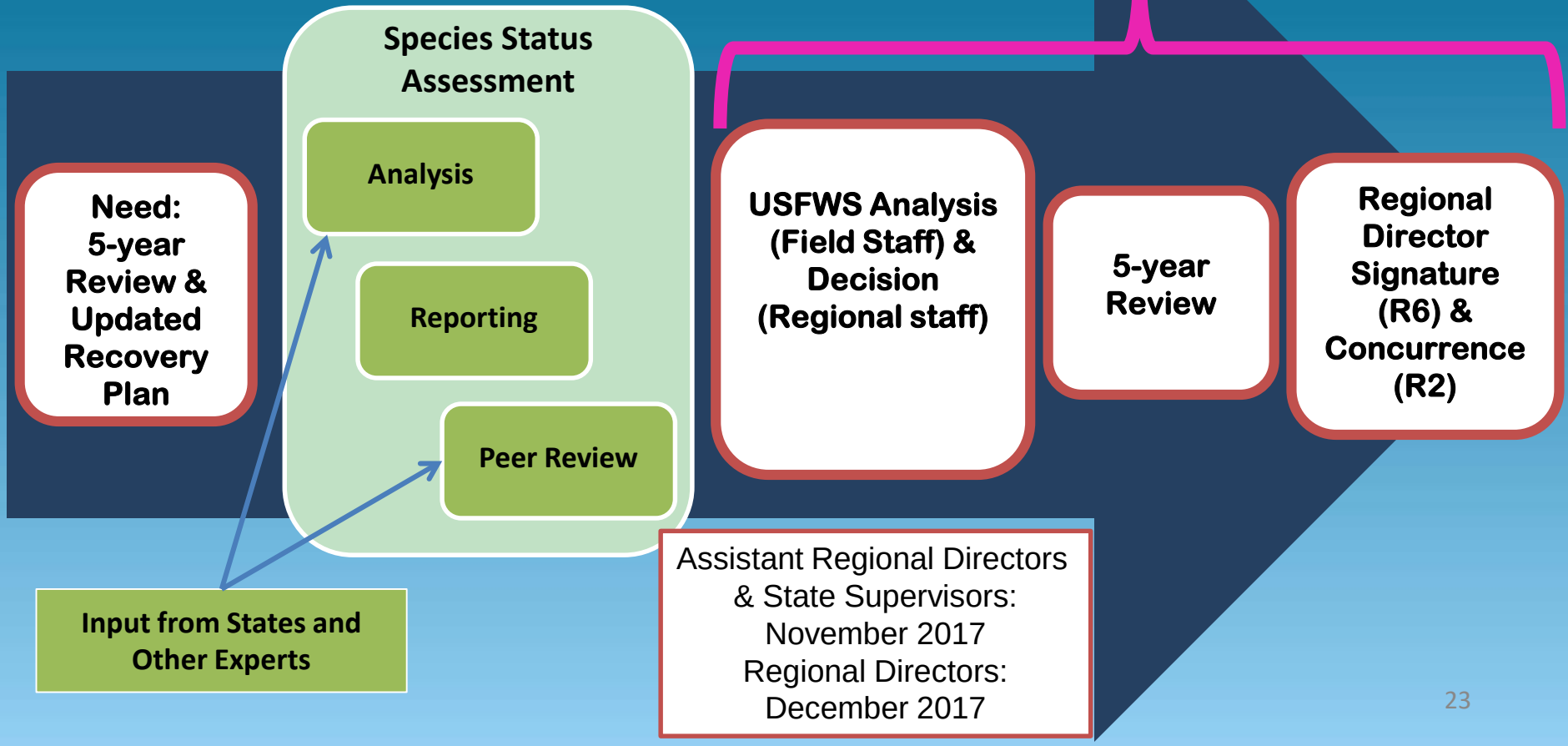
Ch. 6

		Resiliency	Redundancy	Representation
Upper Basin	S1			
	S2			
	S3			
Lower Basin	S1			
	S2			
	S3			

- Viability is more tenuous in the upper basin than in the lower basin
- Under scenarios 2 and 3 the species is fairly well represented and resilient, but redundancy is less certain. Primarily because of the potential to see declines in upper basin populations under scenario 2.
- Uncertainty remains regarding current population trajectories of Humpback Chub, densities of nonnative predators in the upper basin, and risk associated with future conditions throughout the basin.

Humpback Chub SSA

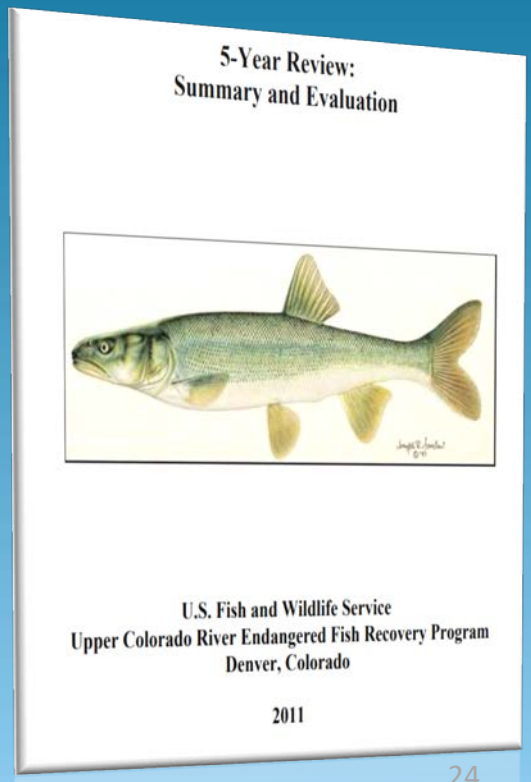
SSA Work Flow



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).



Humpback Chub 5-year Review

Humpback Chub
(Gila cypha)

5-Year Review:
Summary and Evaluation

U.S. Fish and Wildlife Service
Mountain-Prairie Region
Lakewood, Colorado

Signed March 19, 2018

Review Conducted By:

REGIONAL OFFICE APPROVAL:

The Regional Director or the Assistant Regional Director, if authority has been delegated to the Assistant Regional Director, must sign all 5-year reviews.

Lead Regional Director, U.S. Fish and Wildlife Service

Approve Noreen E Walsh Date 3/19/2018

The Lead Region must ensure that other regions within the range of the species have been provided adequate opportunity to review and comment prior to the review's completion. Written concurrence from other regions is required.

Summary Current Condition

Redundancy, Representation & Resiliency

- Independent population locations
- Large, stable lower basin population
- Multiple upper basin populations
- Genetic diversity protected
- Some populations have recently declined / extirpated

- Individuals
  - Long life span
  - Inhabit arduous habitats
- Populations
  - Persist at low abundance
  - Rebound after declines
  - Establish from translocations

Resources in fair to good condition

Humpback Chub 5-year Review

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

Humpback chub

- Current resource conditions are fair to good and support the species;
- Near term extirpation risk of multiple populations is low;
- Resilient, large core population in the lower basin & multiple populations in the upper basin decrease the risk to the species from stochastic & catastrophic events

- Therefore, we conclude that the Humpback chub does not meet the definition of an endangered species.

Humpback Chub 5-year Review

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

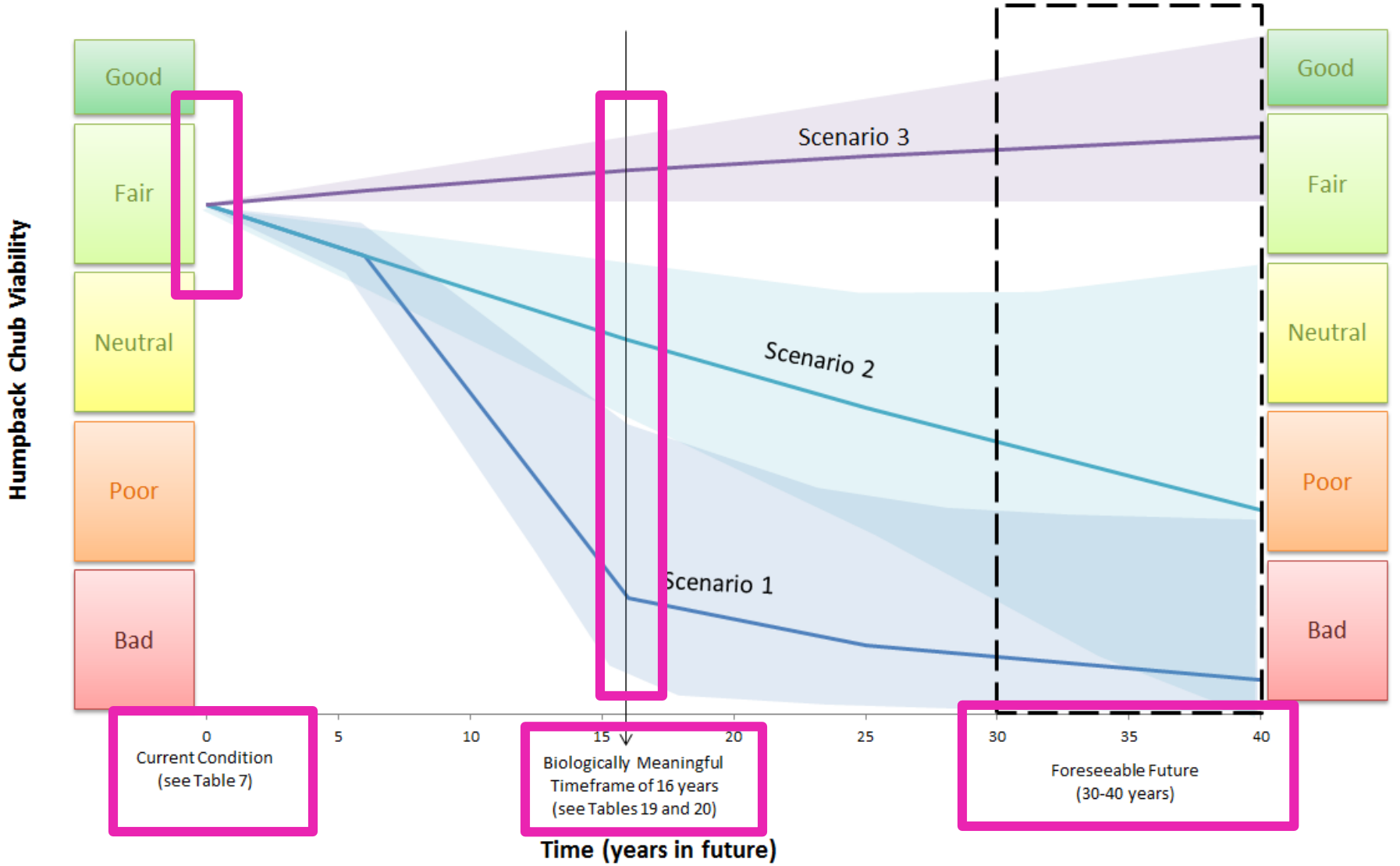
		Resiliency	Redundancy	Representation
Upper Basin	S1			
	S2			
	S3			
Lower Basin	S1			
	S2			
	S3			

SSA used a 16-year Biologically Meaningful Timeframe

USFWS determined that 16 years was not an adequate foreseeable future and requested more information

Additional Viability Analysis

Appendix C



Humpback Chub 5-year Review

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

Humpback chub

- Projected viability declines substantially under scenario 1 within 16 years;
- Projected viability declines under scenario 2 within 40 years;
- Even with the projected viability of the species under scenario 3, there is risk to the species under scenarios 1 and 2 in 16 and 40 years.

- The species could become endangered within the foreseeable future
- Therefore, we conclude that the Humpback chub meets the definition of a "threatened" species.

Humpback Chub 5-year Review

U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW
Humpback Chub (*Gila cypha*)

Current Classification: Endangered

Recommendation resulting from the 5-Year Review:

__X__ Downlist to Threatened
____ Uplist to Endangered
____ Delist
____ No change needed

Appropriate Listing/Reclassification Priority Number, if applicable: 2C

Review Conducted By:

REGIONAL OFFICE APPROVAL:

The Regional Director or the Assistant Regional Director, if authority has been delegated to the Assistant Regional Director, must sign all 5-year reviews.

Lead Regional Director, U.S. Fish and Wildlife Service

Approve Noreen E Walsh Date 3/19/2018

The Lead Region must ensure that other regions within the range of the species have been provided adequate opportunity to review and comment prior to the review's completion. Written concurrence from other regions is required.

What does this mean?

- ❑ We all should celebrate this success
- ❑ Humpback chub conservation is succeeding
- ❑ Conservation actions need to continue to further protect the species viability into the future

- ❑ This is a <u>recommendation</u> to change status
  - ❑ No change in ESA listing status *yet*
- ❑ 5-year Review also recommended revising the recovery plan

Next Steps

Regional Director Walsh and the USFWS are committed to follow through on the recommendations

- ❑ Status change is a federal rulemaking
  1. *Proposed rule* to classify humpback chub as threatened
  2. Receive public comments on proposed rule
  3. Final Rule considers public comments and all information
- ❑ Reconvene the recovery team for a revised recovery plan
  - ❑ If reclassified, recovery plan would only include de-listing criteria

Thank You – Questions?

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(303) 236-9887

Species Status Assessment

Places to go for more information

1. **View videos.** On the NCTC Introduction to SSA Course resource page. https://nctc.fws.gov/courses/csp/csp3910/resources/

2. **Read a manuscript .** Development of a Species Status Assessment Process for Decisions under the U.S. Endangered Species Act Journal of Fish and Wildlife Management

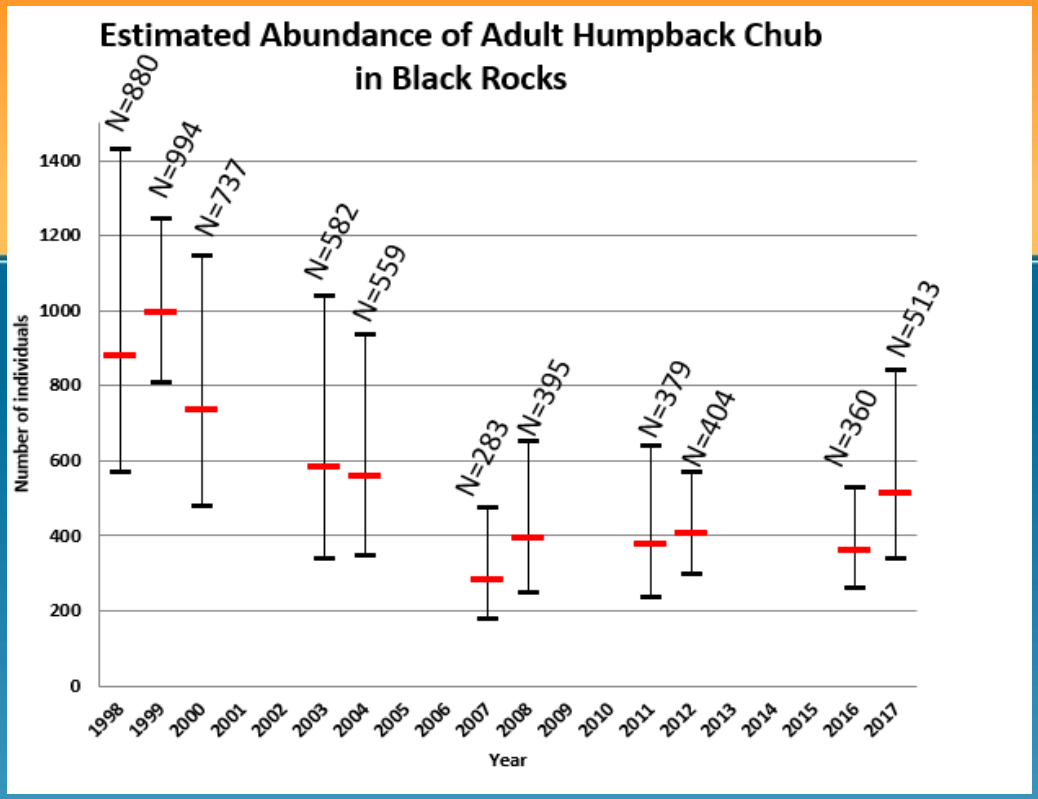
3**. Take a class.**
NCTC Introduction to SSA Course go to DOI Learn, FWS-CSP3910

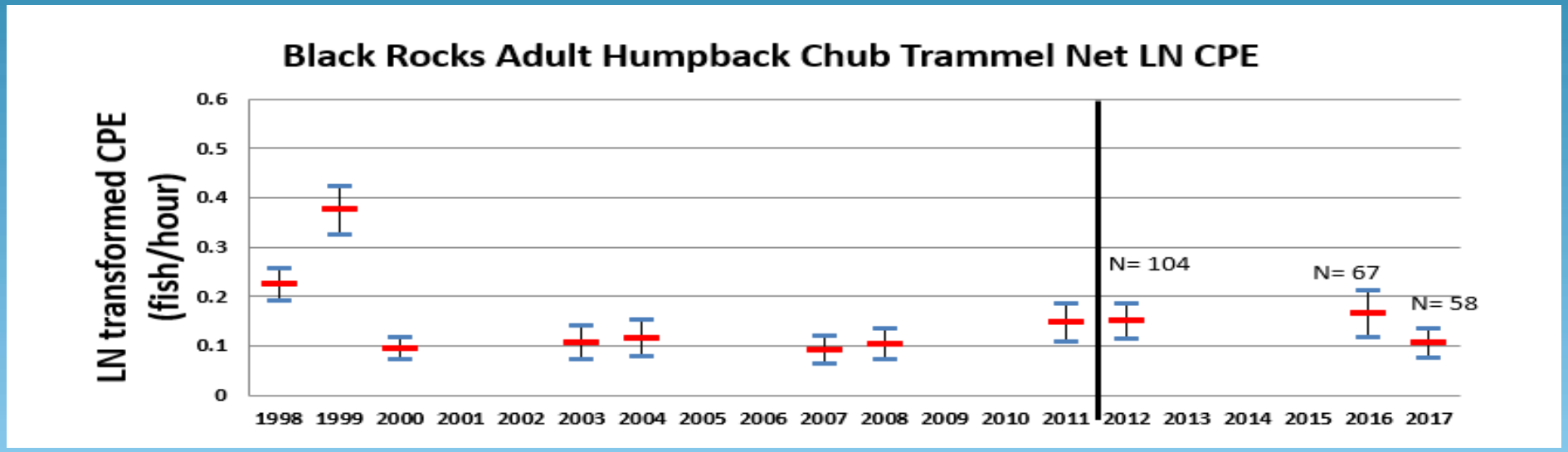
4**. Download material.** USFWS Endangered Species Webpage fws.gov/endangered/improving_esa/ssa.html

5. **Talk to an expert.** Connect with heather_bell@fws.gov and she can direct you to a regional expert on the SSA.

Black Rocks

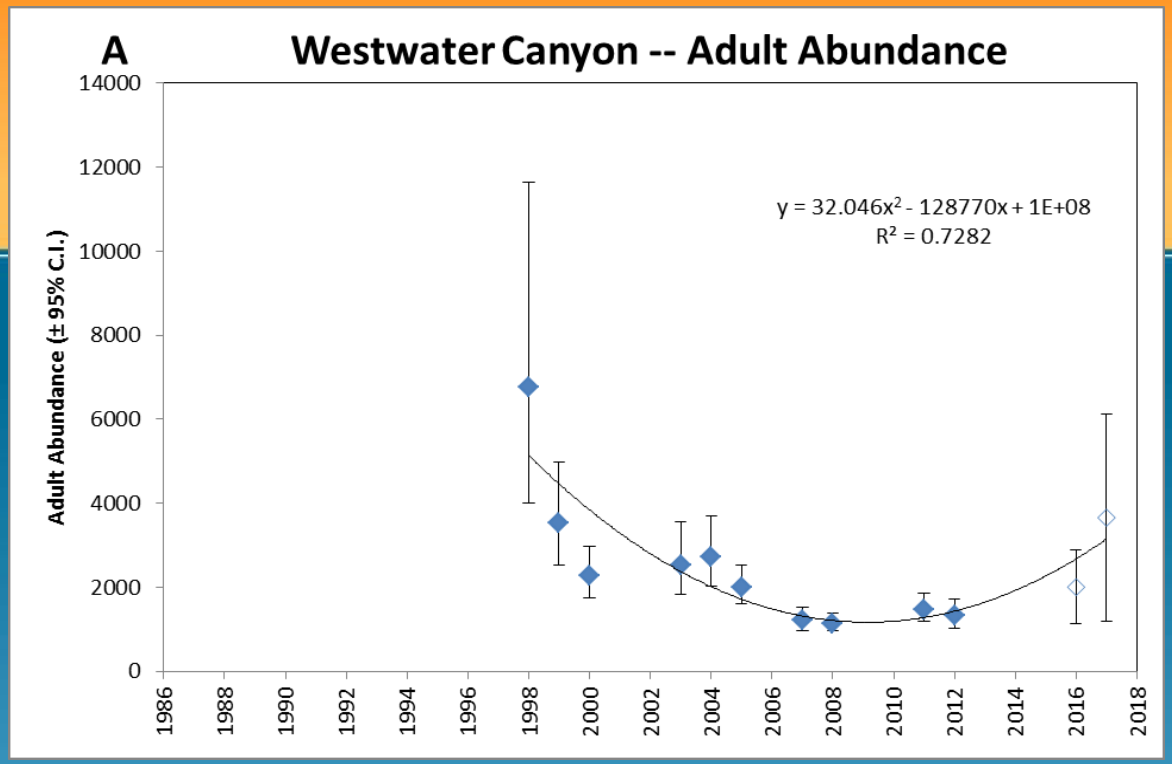
(2016 and 2017 data preliminary)

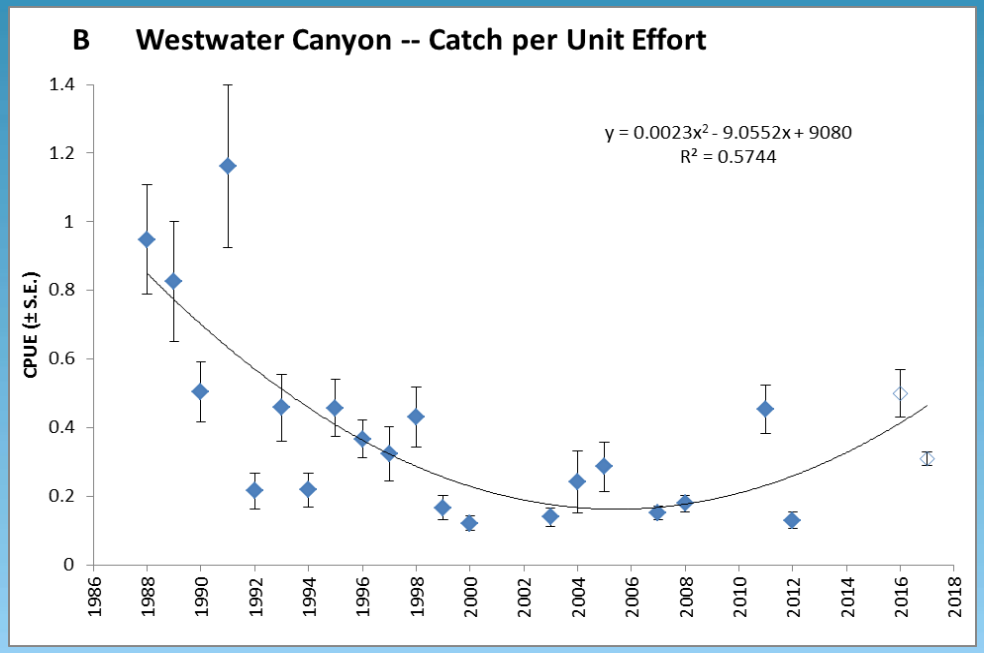


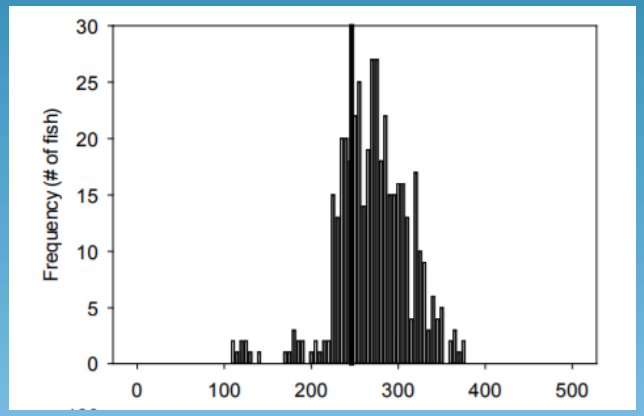


Francis et al. 2017

Westwater Canyon

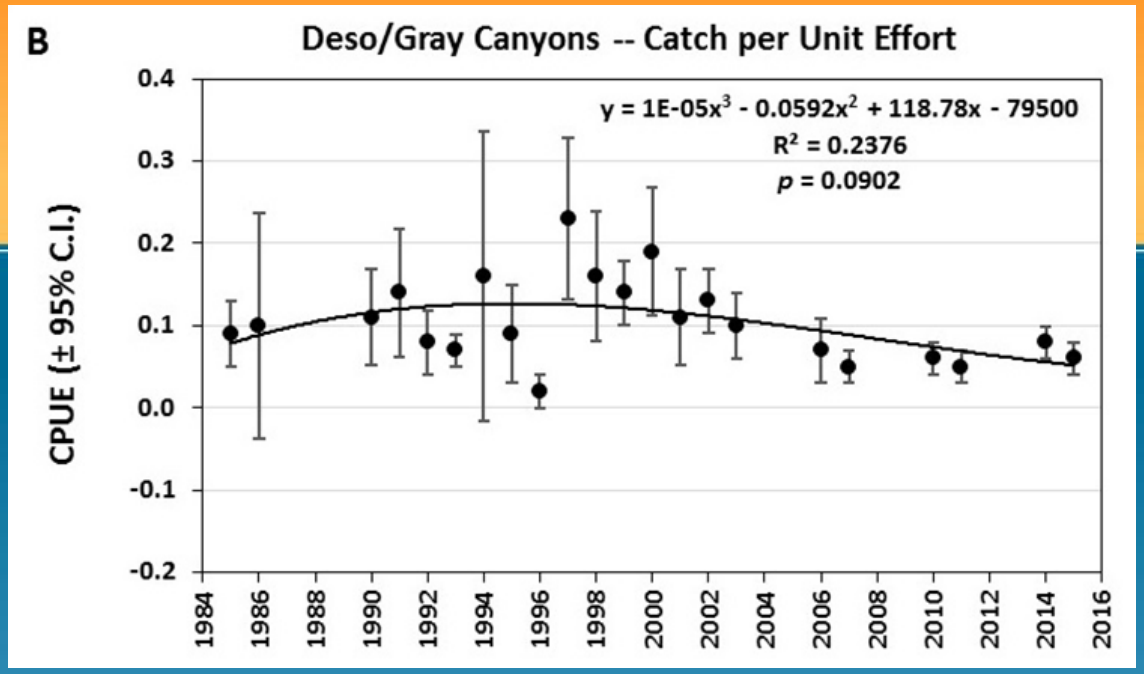


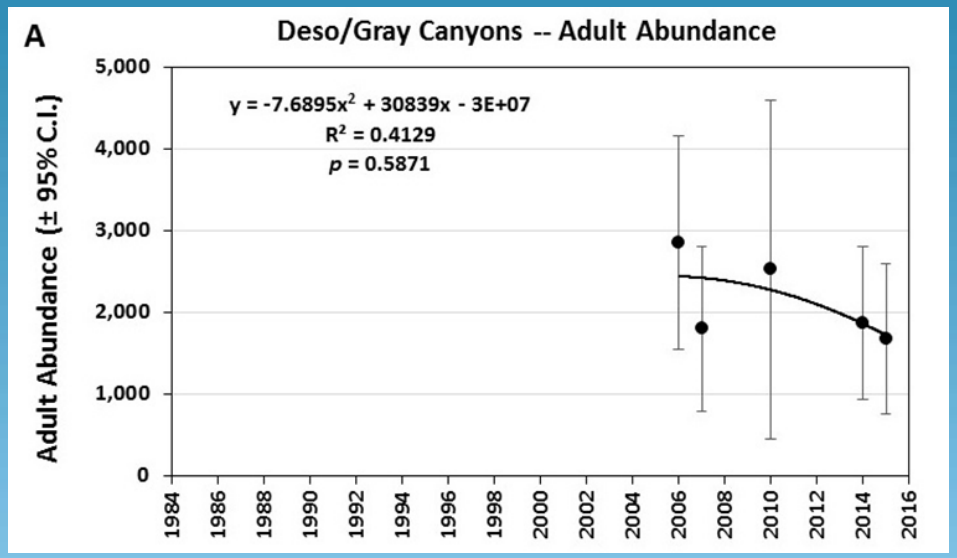




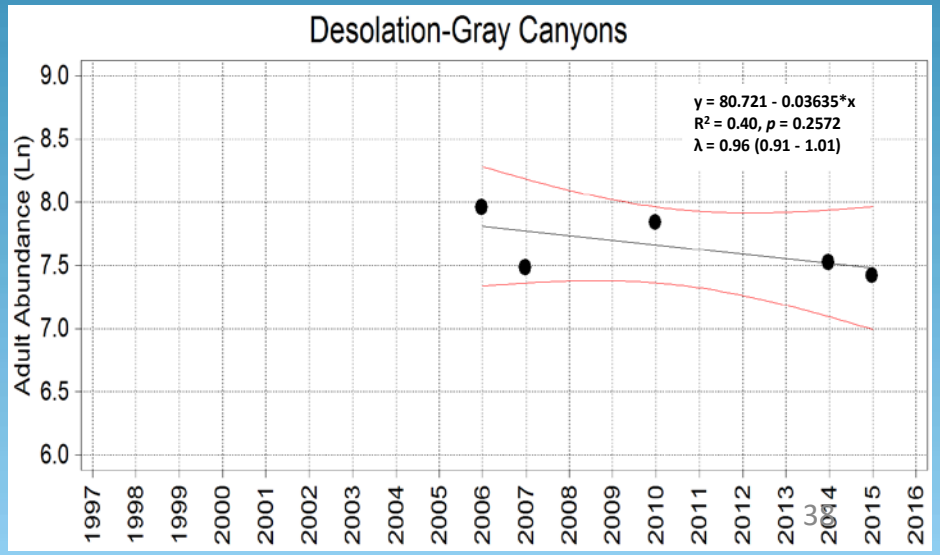
Hines 2017

Desolation / Gray Canyons

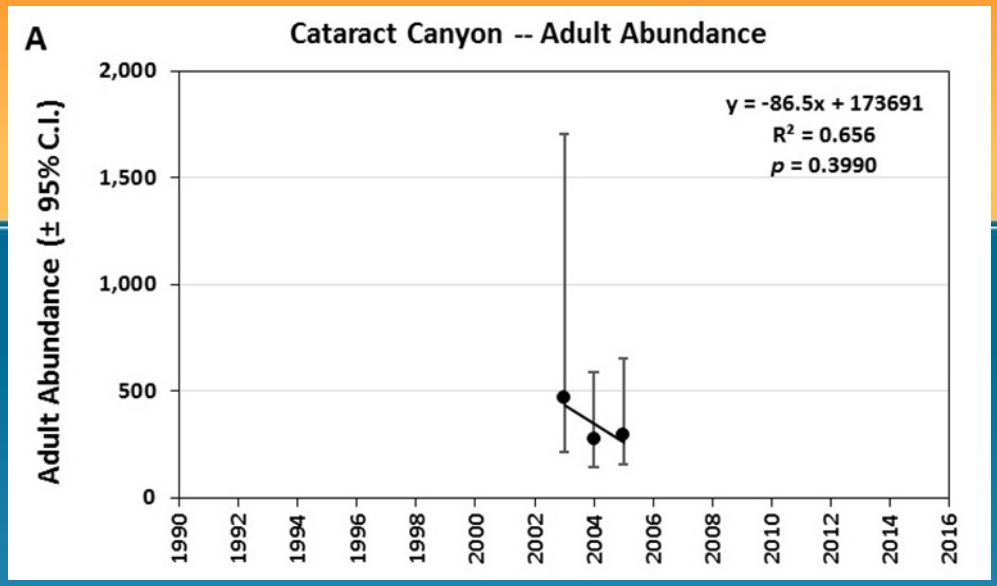




Howard and Caldwell 2018



Cataract Canyon



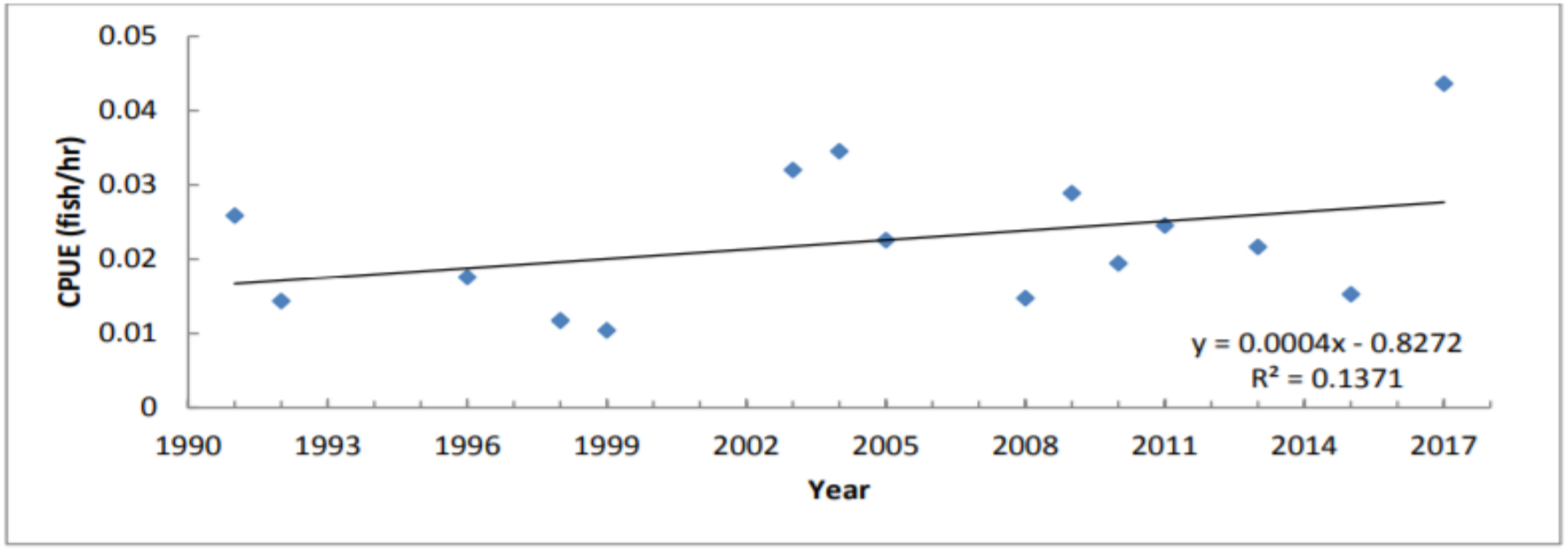


Figure 3. Annual trammel net catch per unit effort (CPUE) for adult humpback chubs in Cataract Canyon, 1991 – 2017.

Ahrens 2017

Dinosaur National Monument

Last humpback chub captured in DNM in 2004