

Upper Colorado River



Endangered Fish
Recovery Program

Welcome

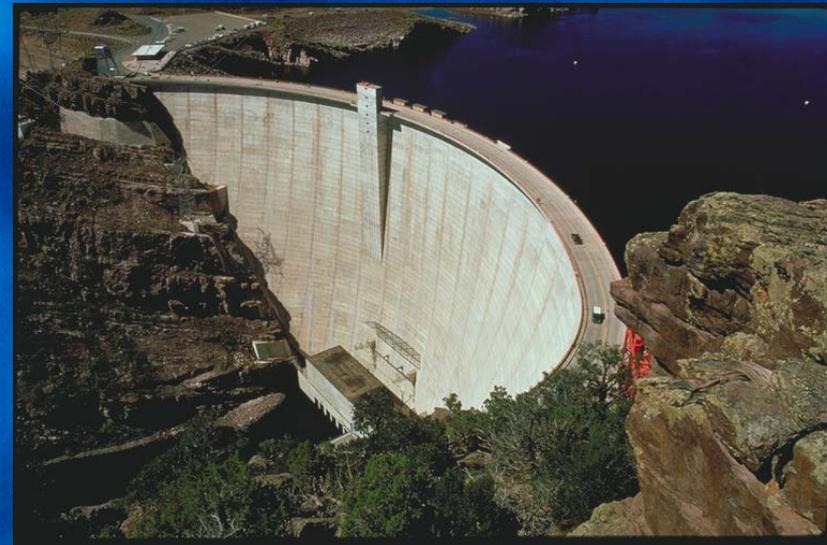
Upper Colorado River Endangered Fish Recovery Program Implementation Committee

Program Director's Office Update:
September 27, 2018



Recovery Program Goal

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.





Our Partners

- **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



Fish Illustrations by Joe Tomelleri



Recovery Program Provides ESA compliance for Historic and New Water Depletion Projects

Upper Colorado River Endangered Fish Recovery Program Summary of Endangered Species Act Section 7 Consultations 1/1988 through 12/31/2017

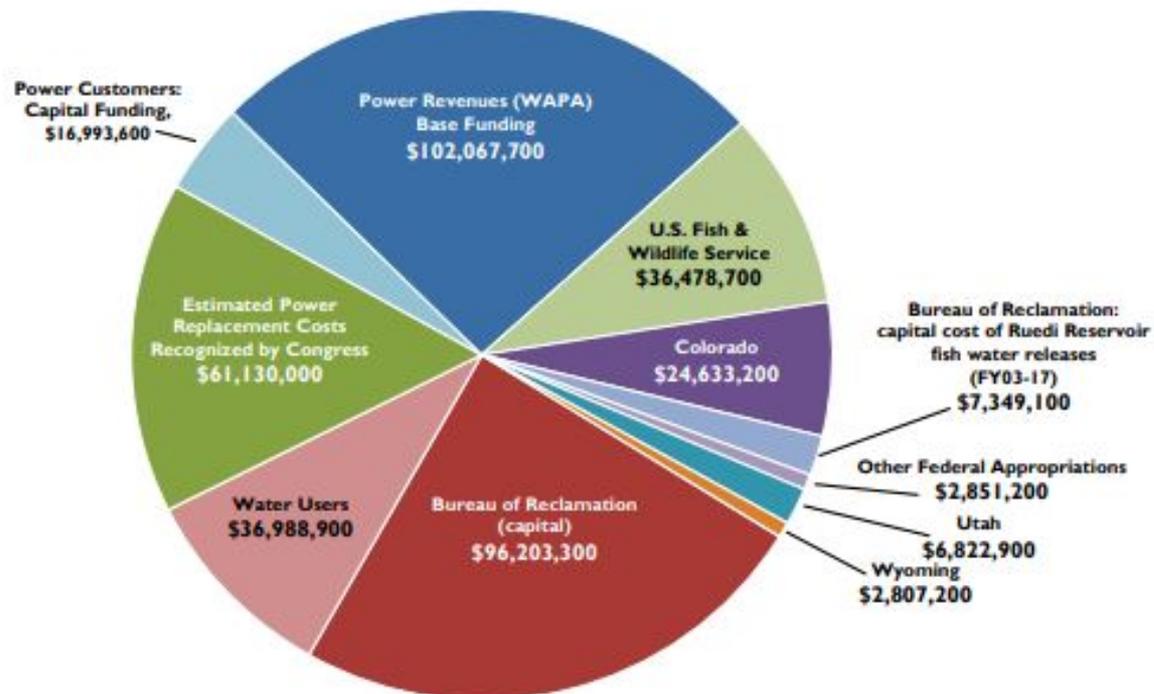
		Historical Depletions	New Depletions	Total
State	Number of Projects	Acre-Feet/Yr	Acre-Feet/Yr	Acre-Feet/Yr
Colorado	1232	1,915,682	207,213	2,122,895
Utah	263	517,898	98,777	616,675
Wyoming	416	83,498	36,574	120,072
CO/UT/WY	238 ¹	(Regional)	(Regional)	
Total	2,149	2,517,078	342,564	2,859,642

¹Small depletion projects (<100 acre-feet per year) consulted on between July 3, 1994, and October 1, 1997, when the Recovery Program did not track the number of these projects by state. Depletion totals associated with these 238 projects are captured by state under new depletions.



Expenditures Upper Colorado River Endangered Fish Recovery Program

Total Partner Contributions = \$394,325,800 (FY 1989-2018)





Program Actions



Fish Habitat Development

Managing Flows for Endangered Fish



Research and Monitoring



Nonnative Fish Control



Stocking Endangered Fish



Recovery Elements

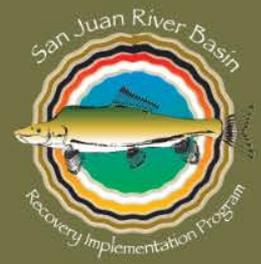
- **Information and Education**
- Propagation, Monitoring, and Data Mngmt.
- Instream Flows and Habitat Management
- Nonnative Fish Management

Upper Colorado River



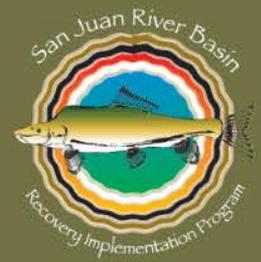
Endangered Fish
Recovery Program

Public Involvement and Outreach Progress Report





Education



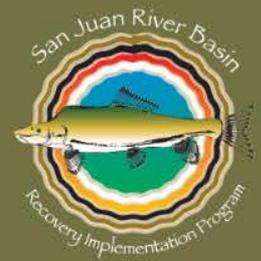
Kiss a Sucker Program in Colorado (CPW) and Utah (USFWS)

4th Grade Education Program in Northeastern Utah (UDWR)





Increase Public Awareness and Support



4A NEWS FRIDAY, MARCH 23, 2018 • DENVERPOST.COM • THE DENVER POST

COLORADO RIVER

Humpback chub “stable,” could move off endangered species list

By Bruce Finley
The Denver Post

After 50 years of work to rescue the Colorado River’s imperiled native humpback chub, a fish that anglers long scorned as “trash” and the government tried to eradicate, federal wildlife authorities on Thursday pronounced them stable.

But dams and predators still threaten survival of these olive-gray fish with fleshy humps above their eyes. They evolved in turbulent canyon waters where they use powerful curved fins to hold their position.

U.S. Fish and Wildlife Service officials said chub populations appear steady enough for a legal reclassification from endangered to threatened. However, to prevent extinction of the chub, officials said extermination of predatory small-mouth bass and simulated high-water flows along the Colorado and Green rivers must continue.

“Is this fish in immediate danger of extinction? No. This is the right thing to do. Science supports it,” said Tom Chart, director of the USFWS Upper Colorado River Endangered Fish Recovery Program. “We still have threats we need to manage. We’re still concerned about how this will play out in the long-term.”

The proposed reclassification reflects growing confidence in efforts to offset harm.

That harm began with dams built along the Colorado River and tributaries after settlers moved into arid regions of the West. Dams destroy habitat for native fish by trapping silt and lowering water temperatures. Four natives in Colorado require life support to survive: the humpback chub, razorback sucker, bonytail and pikeminnow.



Beauty can be in the eye of the beholder when it comes to the humpback chub, a fish that now is considered threatened as opposed to endangered. *Courtesy of USFWS*

Dams hit humpbacks especially hard. Yet the latest federal population estimates, based on netting, has confirmed 500 survivors in the Black Rocks area of Western Colorado. Another 3,500 have survived in Westwater Canyon of the Colorado River in Utah and about 12,000 live in Grand Canyon.

The West’s remade rivers favor trout, coveted by anglers and the recreation industry, and non-native fish such as small-mouth bass that bully and devour humpback chubs. When baby chubs swim out of relatively warm tributaries into the main stem of the Colorado River, cold water shocks them, leaving them vulnerable to the trout and bass.

Humpback chubs have been listed as endangered since 1967 and the “threatened” classification still gives protection. The change signifies simply that biologists do not consider extinction to be imminent. Native Western fish appear in significant numbers on the nation’s endangered species list because settlers of water-scarce areas clung to rivers, siphoning out water and discharging pollution.

Federal wildlife crews in recent years have honed techniques for controlling predator fish who prey on natives, cruising along rivers in boats that shoot out electricity and then scooping out stunned bass and other non-native predators. And the feds work with dam operators to release water periodically to mimic the scouring spring high flows that native fish need.

USFWS biologists currently are considering a new use of simulated two-day floods: targeting the bass.

“Quick increases in flow can really knock down the young small-mouth bass. There’s a bunch of locations where we can do it,” he said, suggesting the Flaming Gorge basin near the Wyoming-Utah border.

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@finleybruce

U.S. FISH AND WILDLIFE SERVICE
Mountain-Prairie Region
134 Union Boulevard
Lakewood, Colorado 80228

For Immediate Release

March 22, 2018

Contact: Melanie Fischer, 303-236-9881, melanie_fischer@fws.gov

After Scientific Review, the U.S. Fish and Wildlife Service to Propose Reclassification of the Humpback Chub from Endangered to Threatened

DENVER — Things are looking up for a rare Colorado River fish, the endangered humpback chub. The U.S. Fish and Wildlife Service (Service) recently completed a species status assessment (SSA) and a 5-year status review that concluded the current risk of extinction is low, such that the species is not in danger of extinction throughout all of its range. The SSA explained that the largest population of humpback chub, which is found in the Colorado and Little Colorado rivers in the Grand Canyon of Arizona, is a stable population of about 12,000 adults.

Our SSA also explained that four smaller populations in the Green and Colorado rivers of the upper Colorado River basin have persisted and do not appear to be in immediate danger of extinction. All five populations are wild, persisting without the need for hatchery stocking. These population-monitoring results, when coupled with ongoing flow management and nonnative predatory fish control, mean that the humpback chub will be considered for reclassification from endangered to threatened in the next year.

Although this unique fish is making a big step toward recovery it still needs help. Conservation work by a diverse group of stakeholders has been one of the key contributions in recovering this native fish. State, tribal, federal, and private stakeholders collaborate via the Upper Colorado River Endangered Fish Recovery Program (established in 1988) and the Glen Canyon Dam Adaptive Management Program (established in 1997) to continue the monitoring programs and to reduce threats to this species’ recovery. “Endangered species recovery in altered and heavily managed ecosystems like the Colorado River is a complicated endeavor,” said Service Mountain-Prairie Regional Director Noreen Walsh. “Our best chance for continued success rests in the power of these collaborative partnerships.”

The humpback chub, which was first described as a unique species from collections in the Grand Canyon in the 1940’s, was not discovered in the upper Colorado River basin until the 1970’s. It was placed on the original list of endangered species in 1967. Humpback chub prefer canyon-bound reaches of river where they complete their life cycle in swift, turbulent currents. The species gets its name from the fleshy hump behind its head. That adaptation coupled with large, curved fins allows the species to maintain position in the turbulent flows. Habitat alterations (from changes in river flows and inundation of canyon reaches), and competition and predation from invasive species are the greatest threats to the humpback chub.

In the 5-year review, the Service also recommends that the species recovery plan be revised to incorporate the best available scientific information on the species needs and actions that will be necessary to eventually delist humpback chub. Efforts to propose reclassification and to revise the recovery plan will be ongoing in the coming year. The proposed reclassification rule and the revised recovery plan will be made available for public comment in the future.

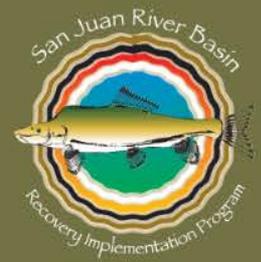
To review the SSA and the 5-year review please visit: www.fws.gov/mountain-prairie/
The U.S. Fish and Wildlife Service works with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. For more information, visit www.fws.gov, or connect with us through any of these social media channels: Facebook, Twitter, Flickr, and YouTube.

– FWS –





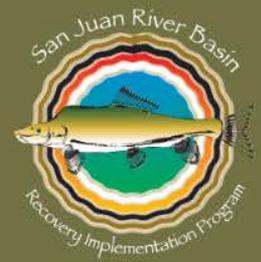
Partner Fishing Tournaments



- ***Colorado Parks and Wildlife's 2018 Ridgway Fishing Tournament removed 1,439 smallmouth bass. CPW's 2018 Elkhead Reservoir Fishing Classic had 269 anglers who caught 540 smallmouth bass and 319 northern pike.***
- ***Wyoming Game and Fish sponsor two burbot tournaments at Flaming Gorge.***
- ***UDWR conducts a smallmouth bass tournament in the Virgin River basin, where the species was illegally introduced.***



Public Events



CRWUA Annual Meeting, December 2017

Western Colorado Horticultural Society Conference, January 2018

Colorado Water Congress Annual Meeting, January 2018

Utah Water Users Meeting, March 2018

Ute Water Festival, May 2018

Endangered Species Day, Denver Aquarium, May 2018

Rocky Mountain Coal Mining Institute Annual Meeting, June 2018

Grand Junction Farmer's Market: July, August and September 2018

Palisade Peach Festival, August 2018

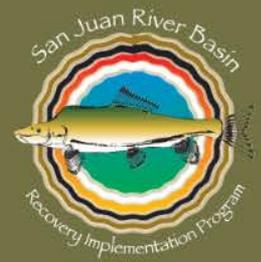
Palisade Farmer's Market, August and September, 2018

Tour de'Vineyards Bike Race, Palisade, September, 2018

Colorado River District's Annual Meeting, Grand Junction, September 2018



Live Exhibits of Endangered Fish



Eureka!
McConnell



Grand Junction,
CO

Denver
Aquarium



Denver, CO

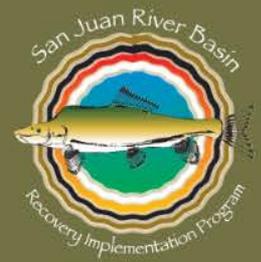
Utah
Field House



Vernal, UT



Publications



2017 - 2018
Highlights
Upper Colorado River Endangered Fish Recovery Program
San Juan River Basin Recovery Implementation Program



Upper Colorado River Endangered Fish Recovery Program



Working Together to

The Upper Colorado River Endangered Fish Recovery Program use innovative, cost-effective water and hydropower resources are in the needs of people in growing western communities.

The recovery program's partners represent all water power customers, and American Indian tribes. They have achieved greater results than independent efforts and minimized costs.

The recovery programs currently provide 3.7 million acre-feet per year. No lawsuits have been filed.

Nonnative Fish: The

The overall goal for recovery of the four endangered fish is to increase and protect the habitat on which those population recovery elements.

Providing Flows



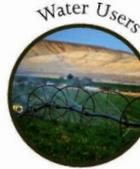
Stocking Endangered Fish

In the Upper Basin, despite years of significant effort, the nonnative fish threat remains largely uncontrolled.



Upper Colorado River Endangered Fish Recovery Program

THE PATH TO UPPER CO



Water Users



Conservation Groups

swimming upstream

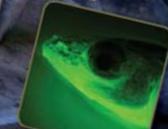
San Juan River Basin Recovery Implementation Program
Upper Colorado River Endangered Fish Recovery Program

Field Report 2017
Download our digital edition at www.coloradoriverrecovery.org

In this issue



Grand Canyon has robust humpback chub population p.4



Calum marking experiment shows good results p.8



Colorado Parks and Wildlife fishing tournaments a big success p.10

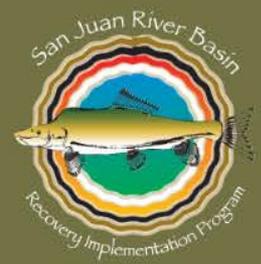


Coordinated releases boost peak flows p.14

Black Rocks, critical habitat to the endangered humpback chub. This canyon offers some of the deepest water in the Colorado River.



Educational Items



Temporary Tattoos



BONYTAIL



HUMPBACK CHUB

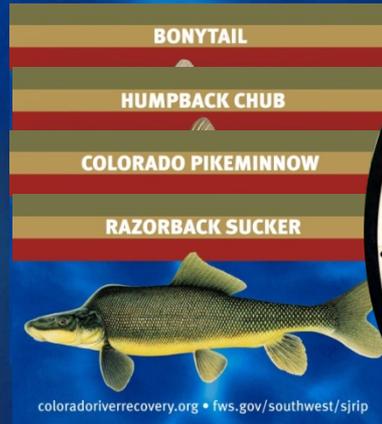


RAZORBACK SUCKER



COLORADO PIKEMINNOW

Lapel Pins + Trading Cards



coloradodriverrecovery.org • fws.gov/southwest/sjrip

Paper Stickers



Upper Colorado River Endangered Fish Recovery Program

303-969-7322

ColoradoRiverRecovery.fws.gov

Working Together to Recover Endangered Fishes While Water Recycles

Ruler



Vinyl Die-Cut Stickers



Beverage Holder



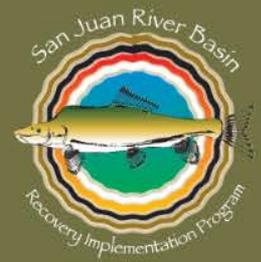
Spinning Wheel of Recovery



Greeting Cards



I&E Post 2023



Increase Outreach Efforts in Critical Habitat

- **Creation of “Friends Group” and increase volunteers for public events, geographically located in critical habitat.**
- **Continue to provide high quality educational items that inform and inspire local citizens to care about endangered fish in the upper Colorado River basin.**
- **I&E Coordinator position should be located in Grand Junction, CO or Vernal, UT to better facilitate outreach post 2023.**



Recovery Elements

- Information and Education
- **Propagation, Monitoring, and Data Mngmt.**
- Instream Flows and Habitat Management
- Nonnative Fish Management

Upper Colorado River



Endangered Fish
Recovery Program

Propagation, Monitoring and Data Management

Progress Update

Julie Stahli
Data Coordinator



Propagation



Bonytail *Gila elegans*

35,000 fish annually >250 mm



Razorback sucker *Xyrauchen texanus*

12,000 fish annually >350 mm



Monitoring – Adult Populations

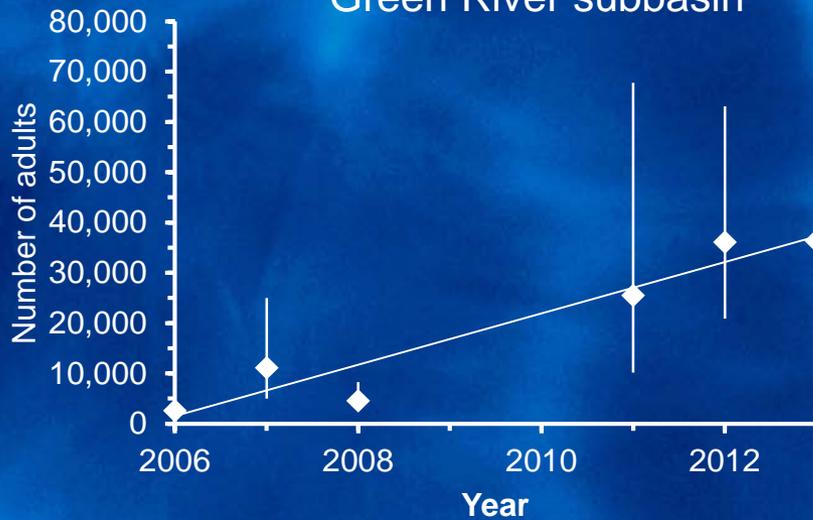
- 2018
 - Humpback chub
 - ✦ Desolation-Gray Canyon
 - Colorado pikeminnow and razorback sucker
 - ✦ Green River



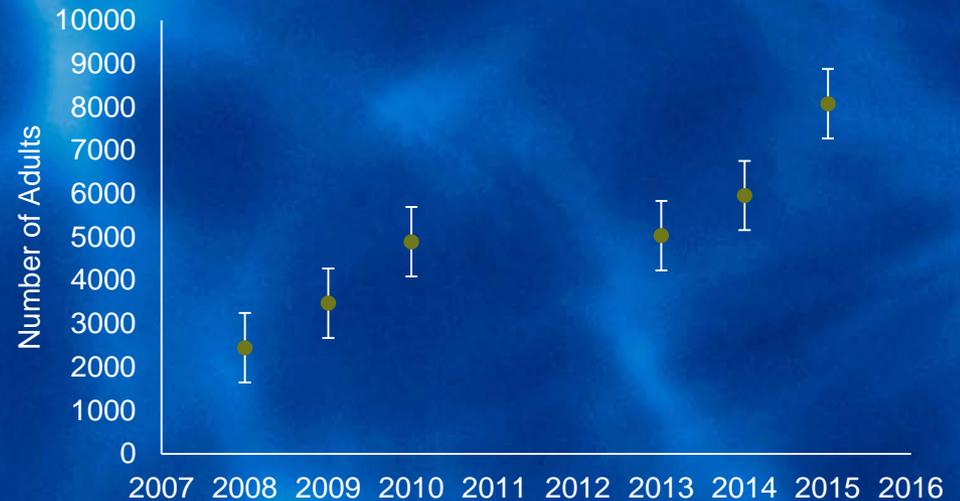


Monitoring – Razorback sucker

Green River subbasin

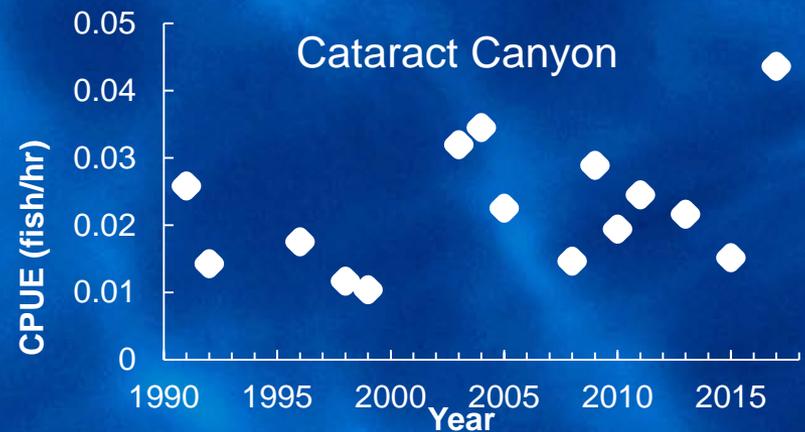
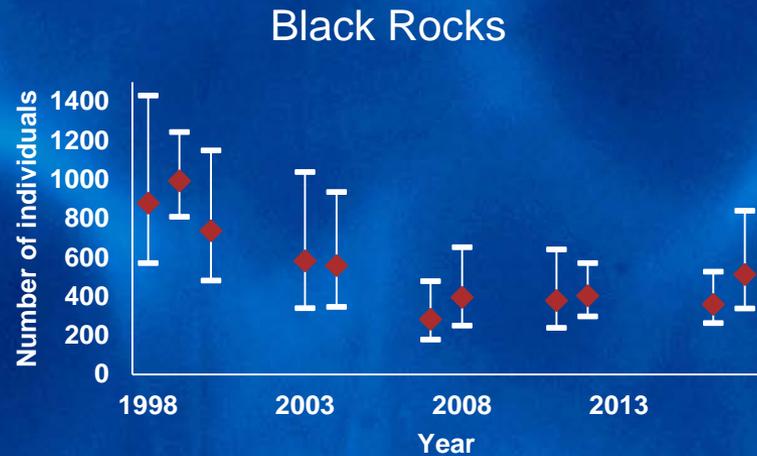
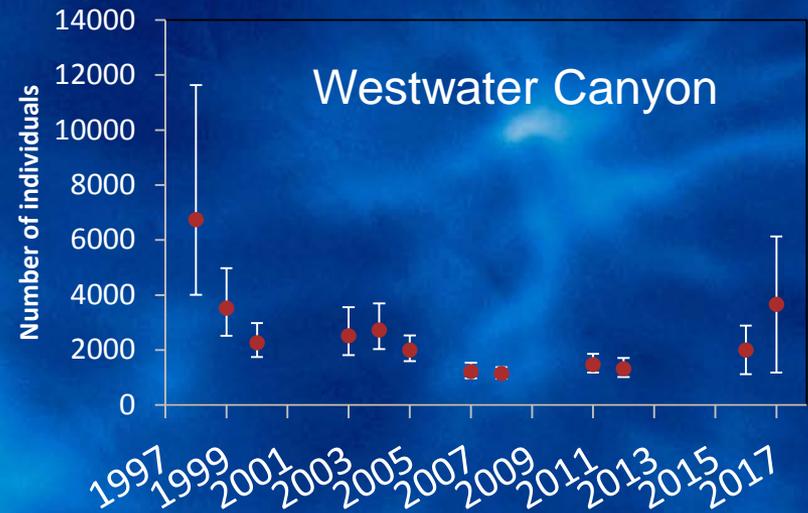


Colorado River subbasin





Monitoring – Humpback chub





Monitoring – Adult Populations

- 2019
 - Humpback chub
 - ✦ Desolation-Gray Canyon
 - ✦ Cataract Canyon
 - Colorado pikeminnow and razorback sucker
 - ✦ Colorado River



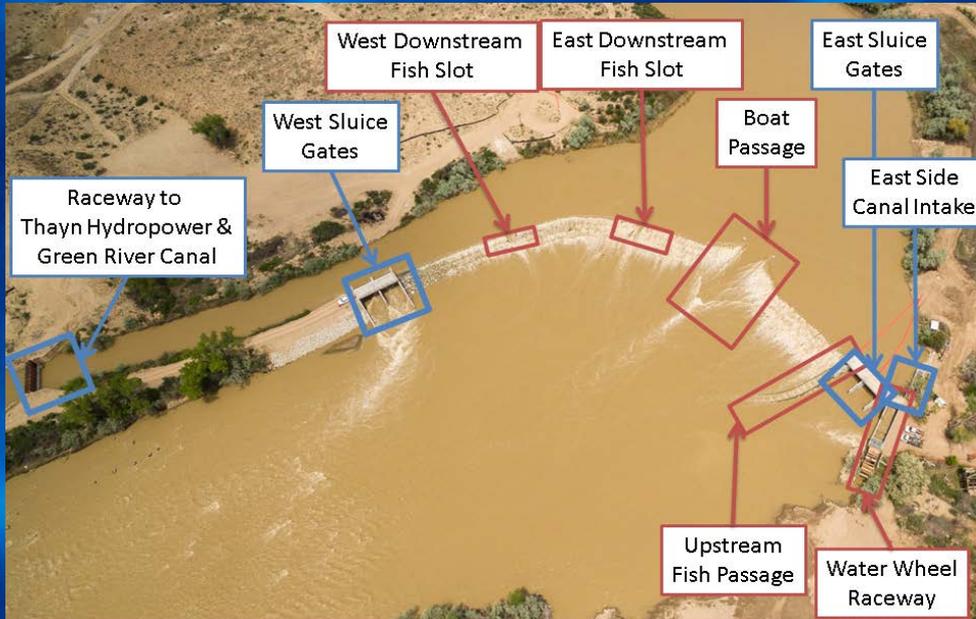


Life Stage Monitoring

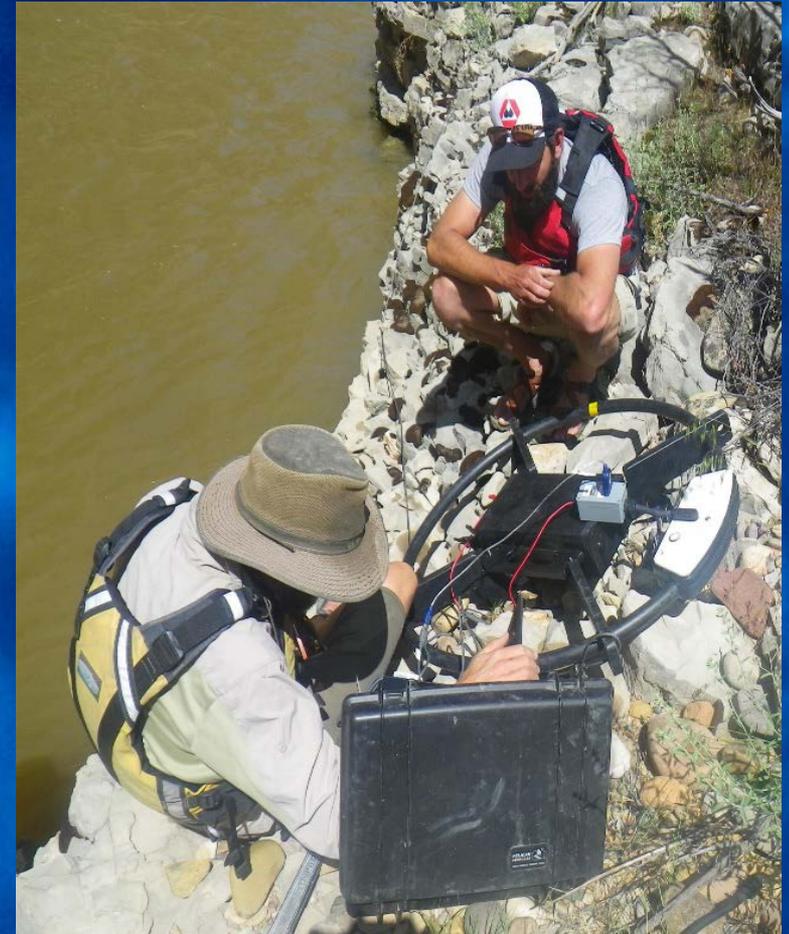




Passive Monitoring

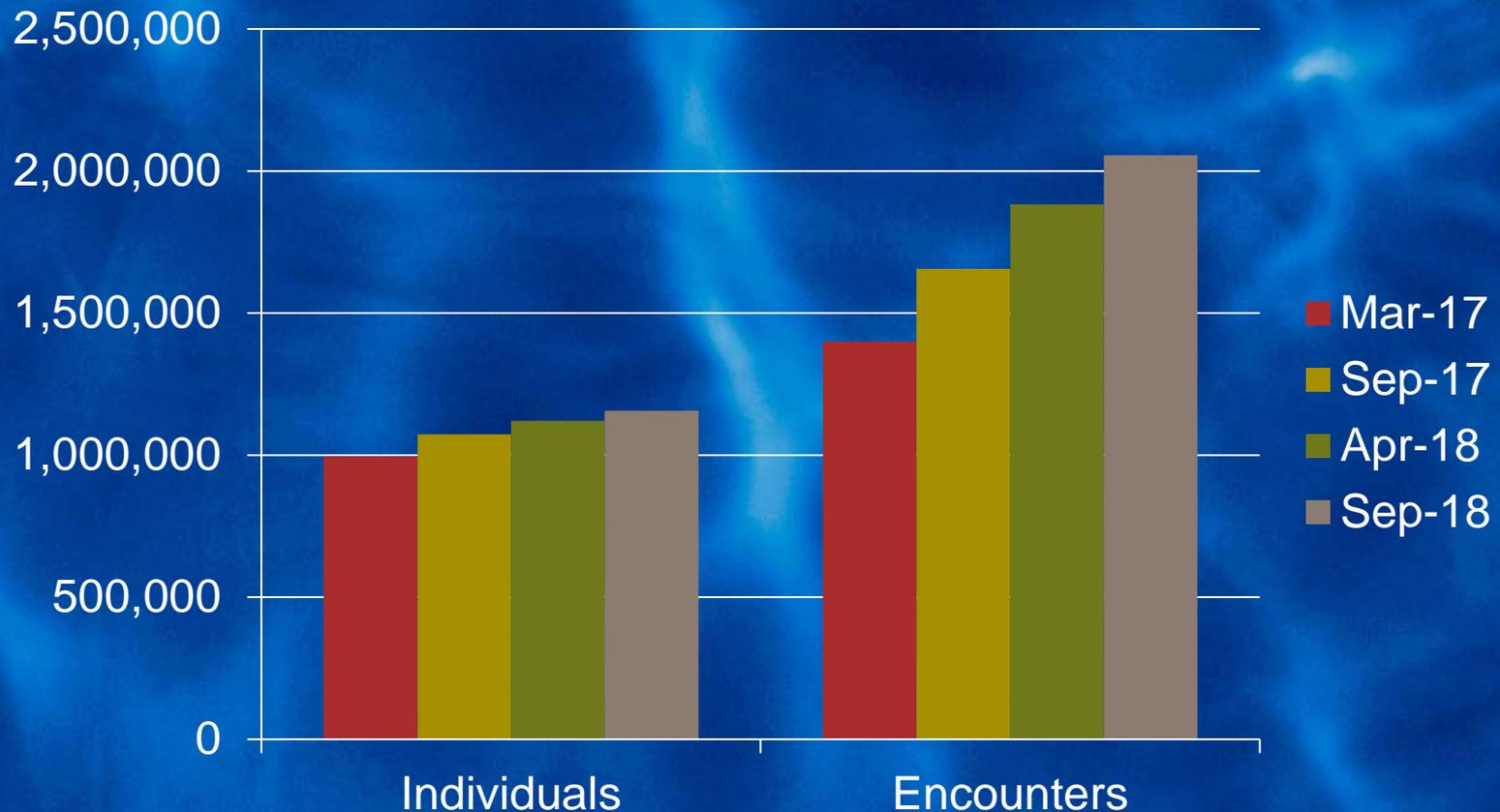


Green River Diversion Antenna Array Layout
Red = Antenna Locations
Blue = Other facilities





Species Tagging, Research and Monitoring System (STReaMS)





Species Tagging, Research and Monitoring System (STReaMS)

- Enhanced structure has been completed
- Progressing on data cleanup
- Assessing development of query tools



Questions?





Recovery Elements

- Information and Education
- Propagation, Monitoring, and Data Mngmt.
- **Instream Flows and Habitat Management**
- Nonnative Fish Management

Upper Colorado River



Endangered Fish
Recovery Program

Hydrology and Instream Flow Updates

Don Anderson

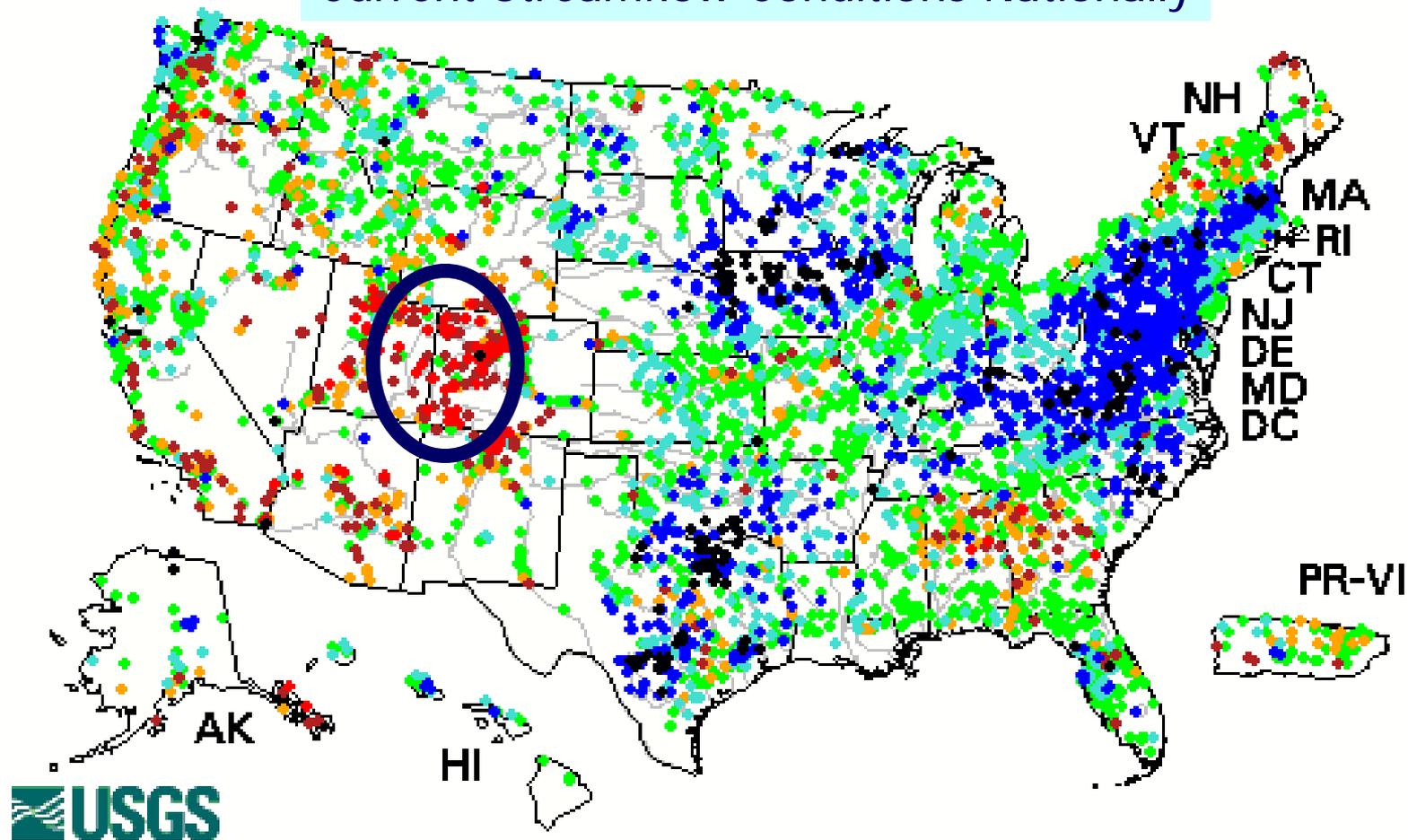
Instream
Flow
Coordinator





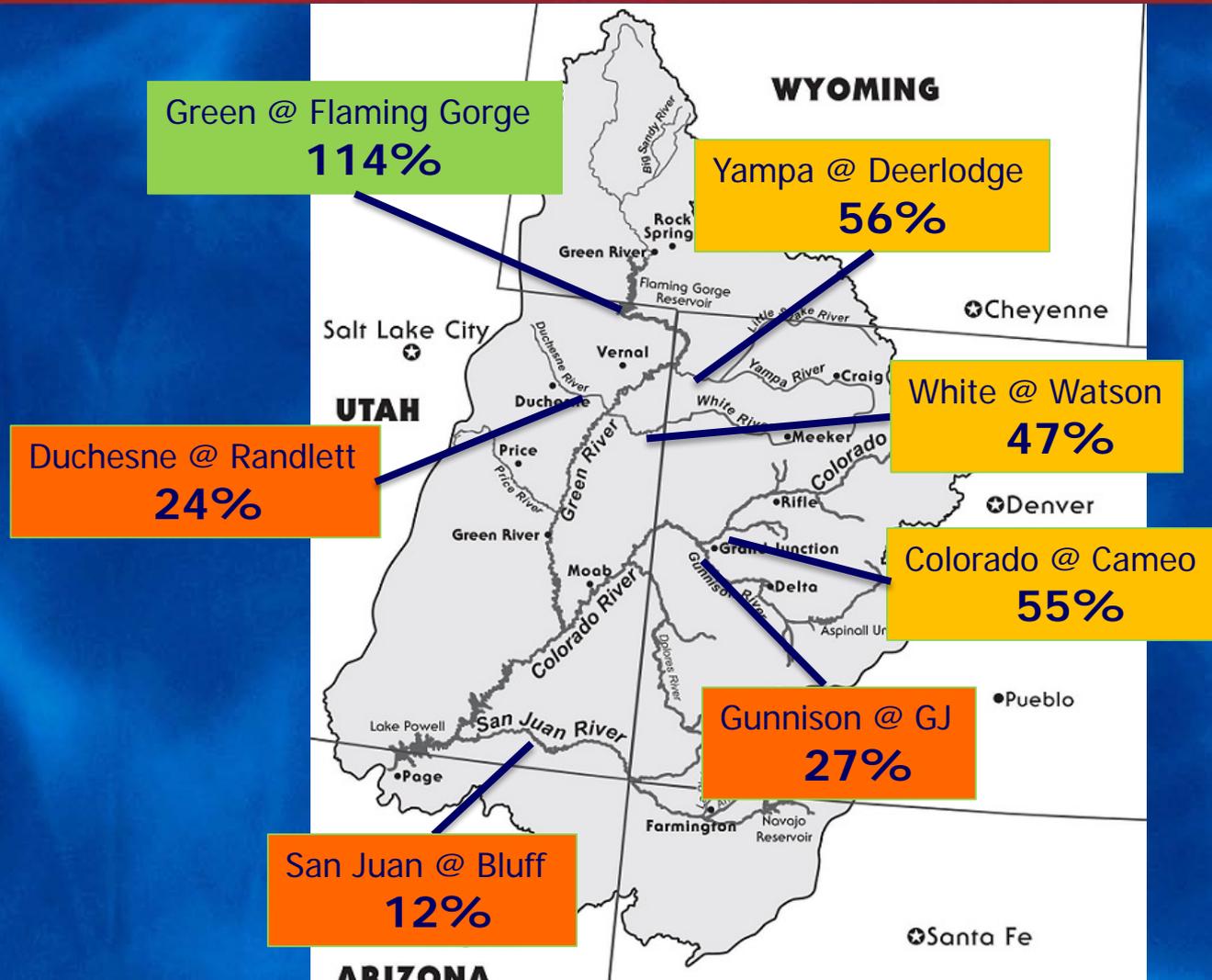
2018 Water Conditions

Current Streamflow Conditions Nationally





Runoff during peak period (Apr-Jul) as percent of average in 2018





2018 Peak Flows

River	Location	Mean Daily Peak	2018 Peak	% of Avg Peak
Yampa	<i>Deerlodge Park</i>	12,500	8,690	70%
Green	<i>Jensen</i>	16,500	12,100	73%
White	<i>Watson</i>	2,400	1,360	57%
Duchesne	<i>Randlett</i>	1,800	105	6%
Gunnison	<i>Grand Junction</i>	8,000	2,030	25%
Colorado	<i>Cameo</i>	23,000	6,650	29%
San Juan	<i>Bluff</i>	11,730	1,380	12%



2018 Base Flows

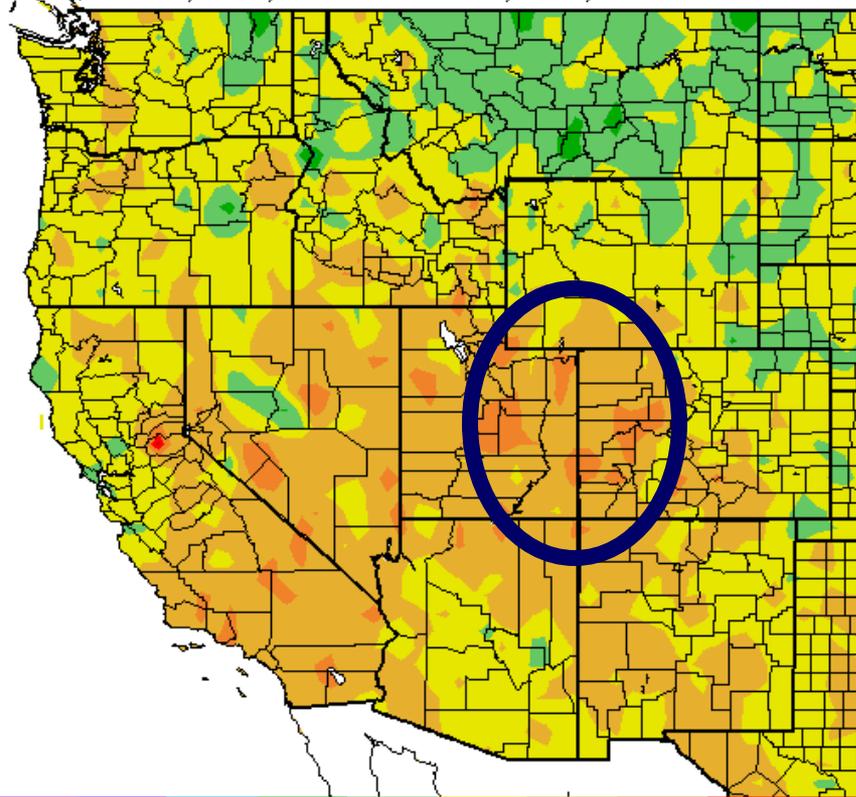
Spoiler Alert:

- 2018 has been an *exceptionally poor* year for summer base flows
- Exceptions: where really large Reclamation reservoirs upstream had sufficient uncommitted storage available this year to support flows for the duration of the season:
 - Flaming Gorge – Green River
 - Aspinall Unit – Gunnison River



Base Flow Collapse Culprit #1: Jul-Sep temperature anomalies

Ave. Temperature dep from Ave (deg F)
6/25/2018 - 9/22/2018



-10 -8 -6 -4 -2 0 2 4 6 8 10

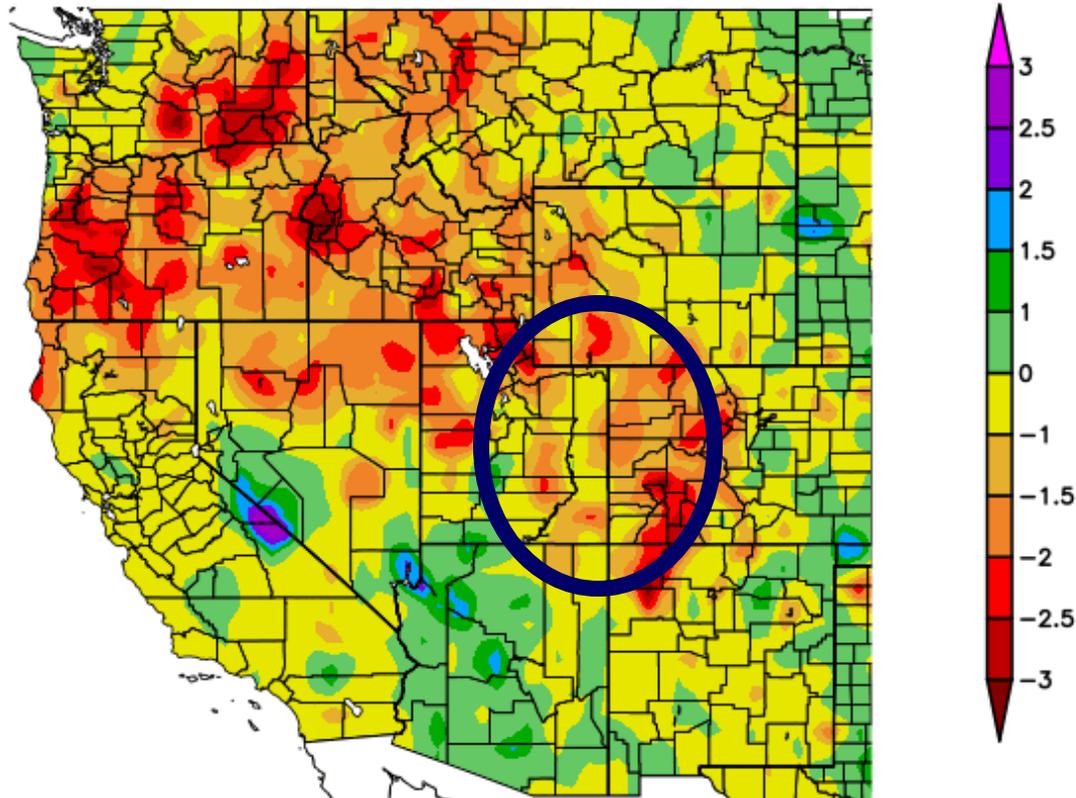
Generated 9/23/2018 at WRCC using provisional data.

NOAA Regional Climate Centers



Base Flow Collapse Culprit #2: Jul-Sep precipitation anomalies

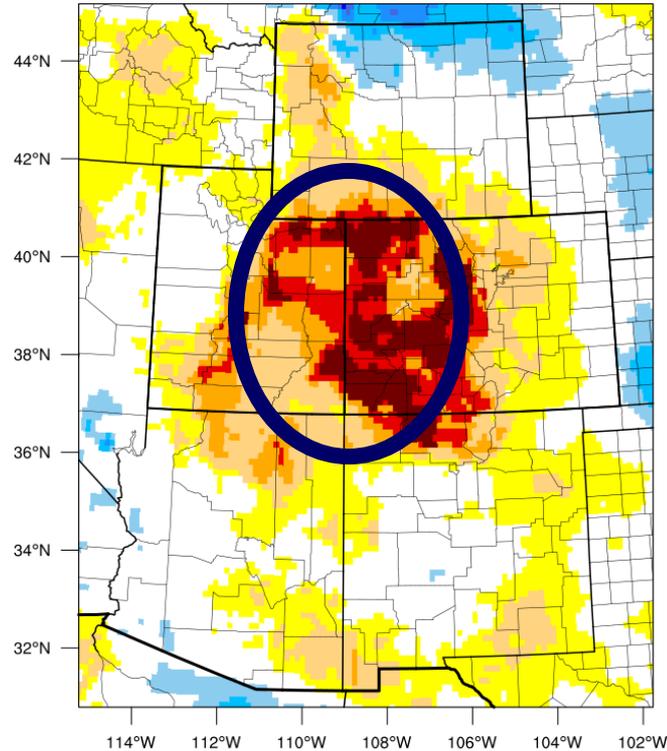
90 Day SPI
6/25/2018 - 9/22/2018





Result: intensified drought conditions

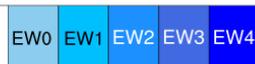
3-month EDDI categories for September 18, 2018



Drought categories



Wetness categories



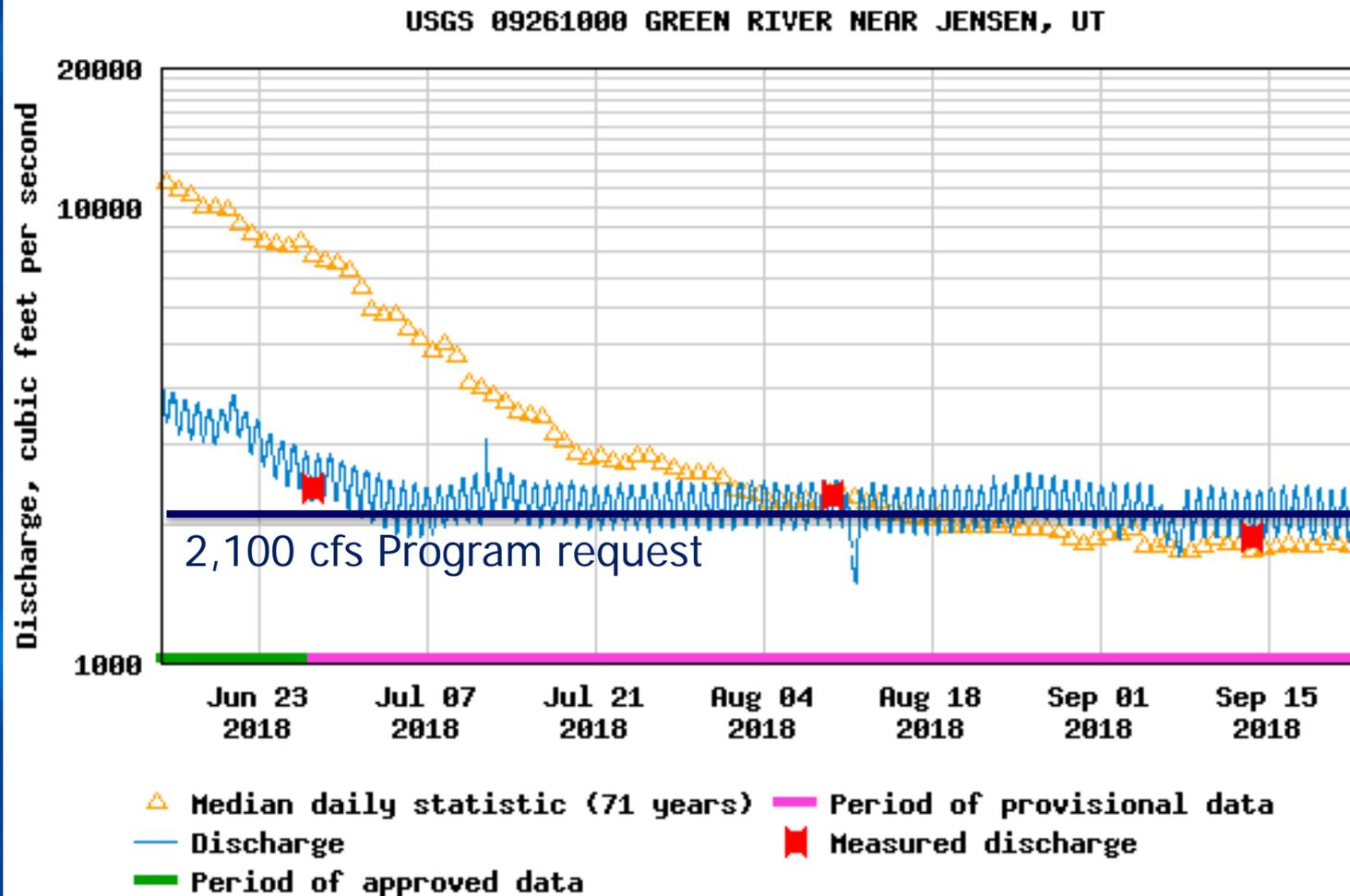
100% 98% 95% 90% 80% 70% 30% 20% 10% 5% 2% 0%

(EDDI-percentile category breaks: 100% = driest; 0% = wettest)

Map shows
drought index
considering
only mid-June
to mid-Sept
2018



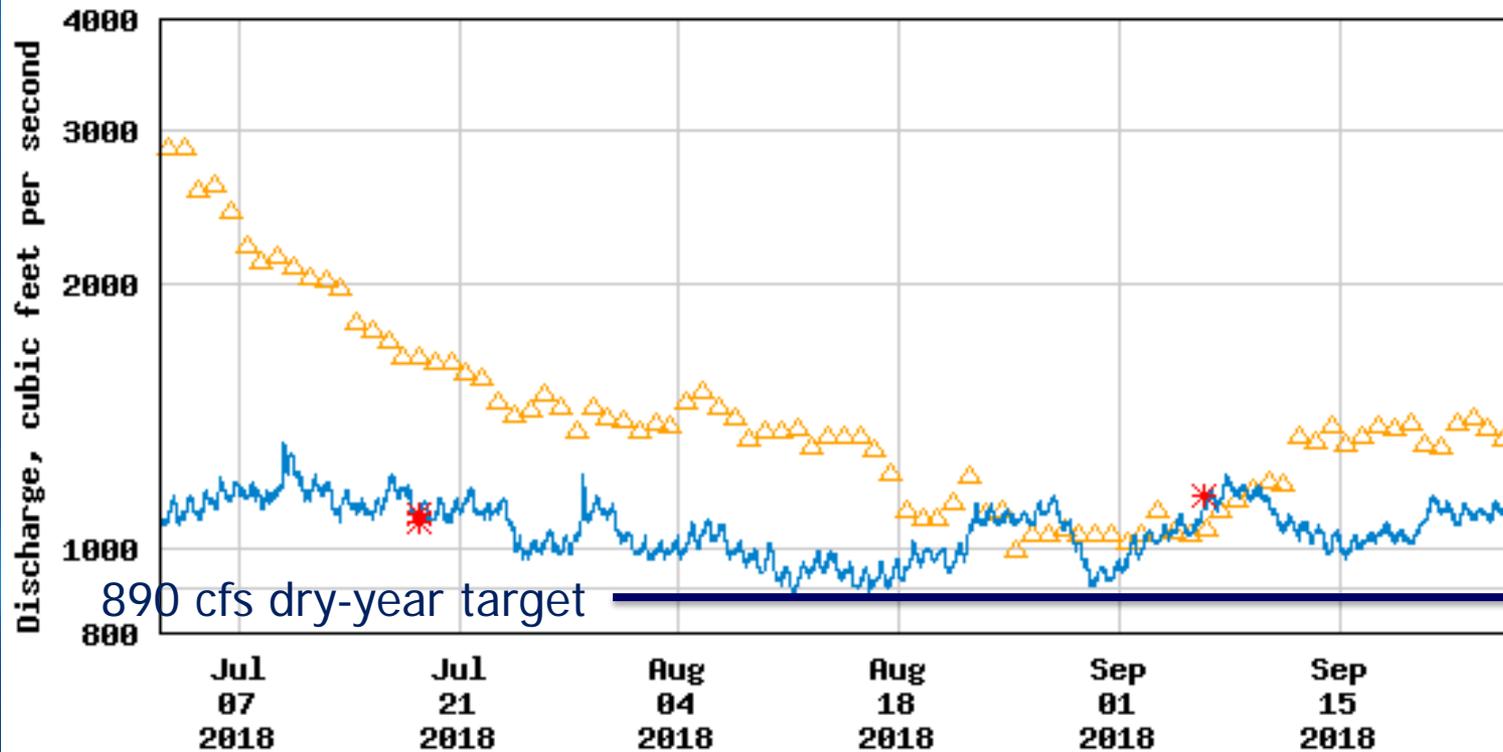
Green River Reach 2 (Jensen, UT)





Gunnison River (Grand Junction)

USGS 09152500 GUNNISON RIVER NEAR GRAND JUNCTION, CO.

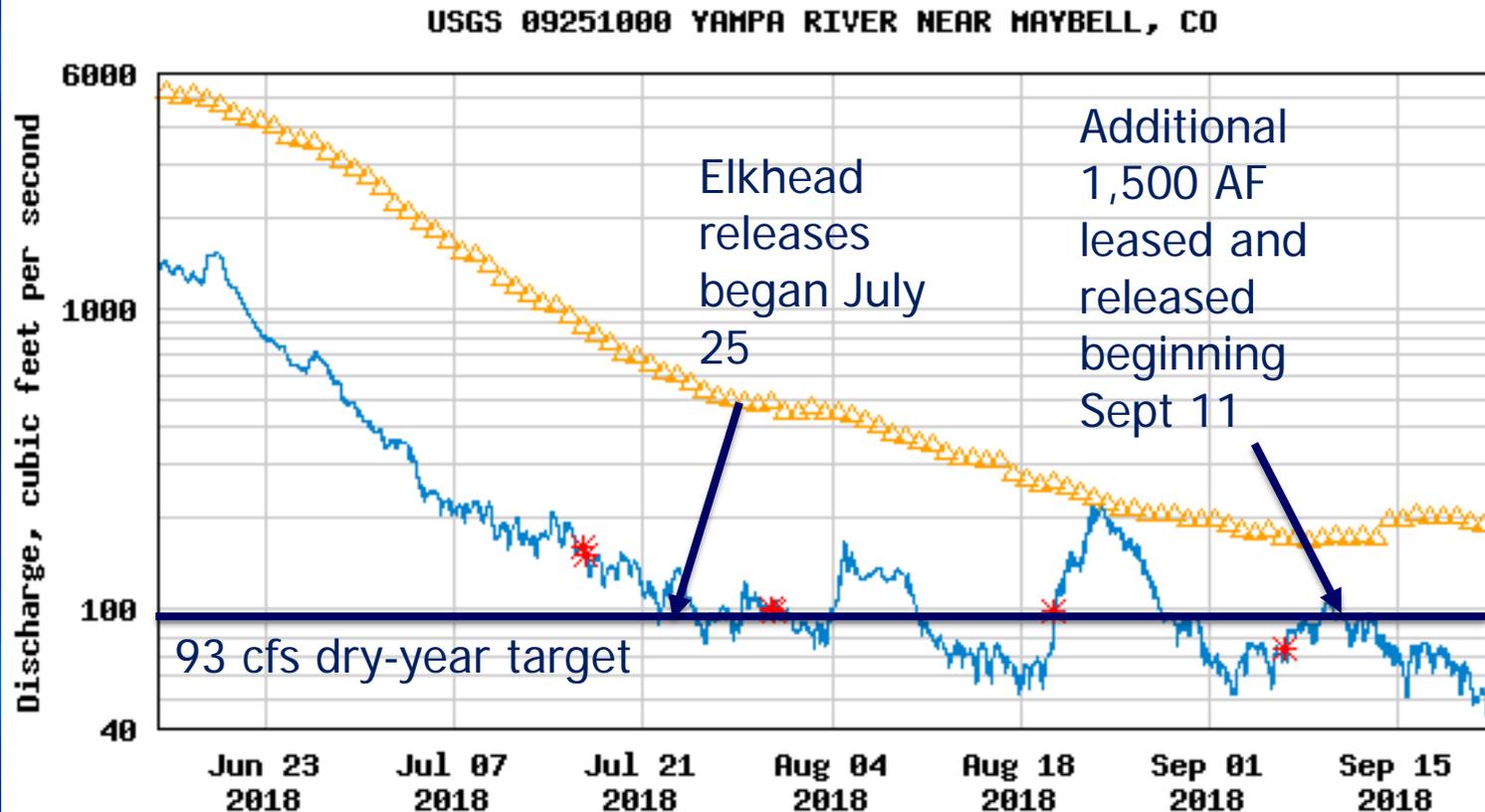


----- Provisional Data Subject to Revision -----

- △ Median daily statistic (109 years) * Measured discharge
- Discharge



Yampa River @ Maybell, CO

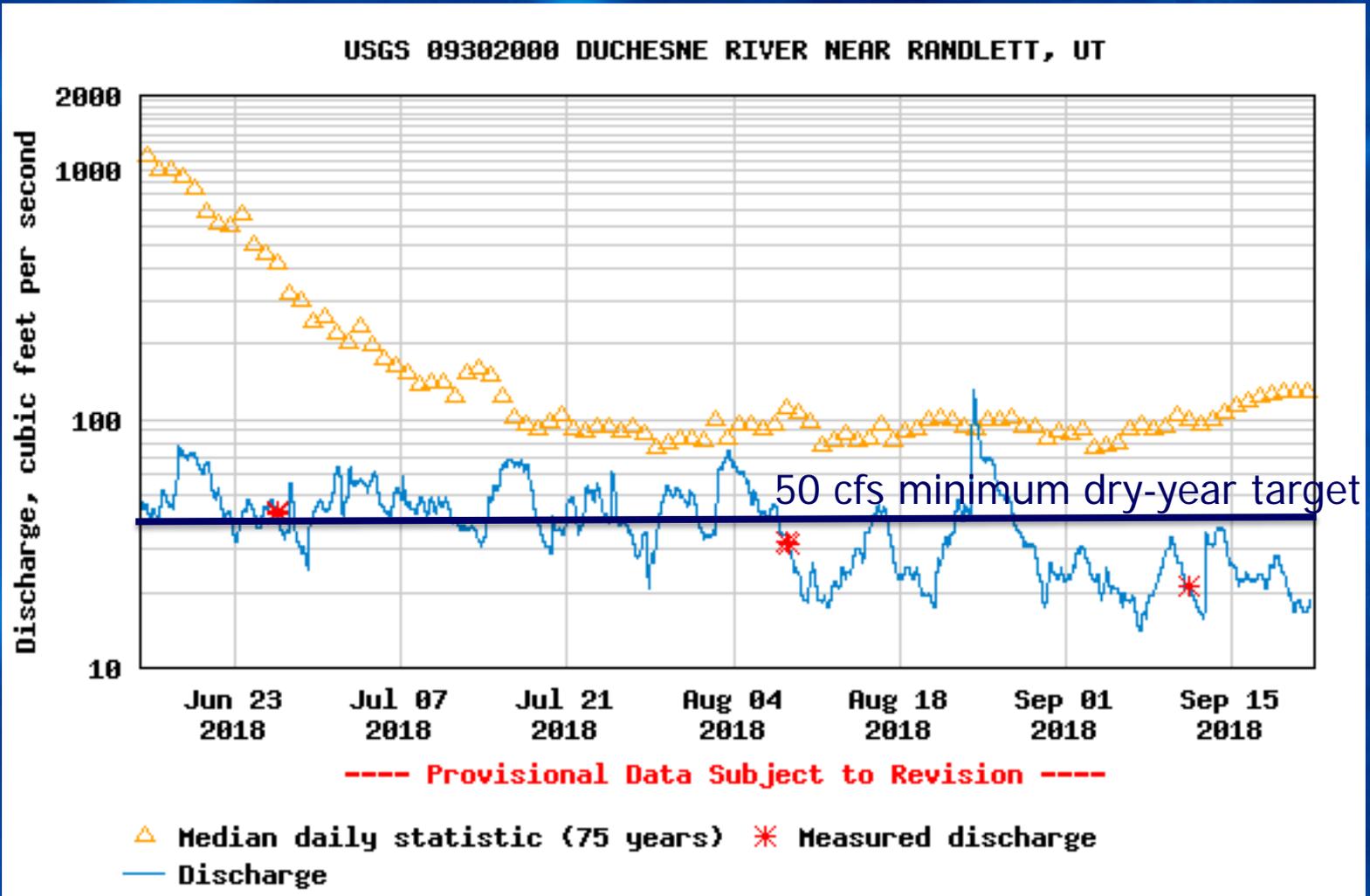


---- Provisional Data Subject to Revision ----

- △ Median daily statistic (102 years)
- * Measured discharge
- Discharge



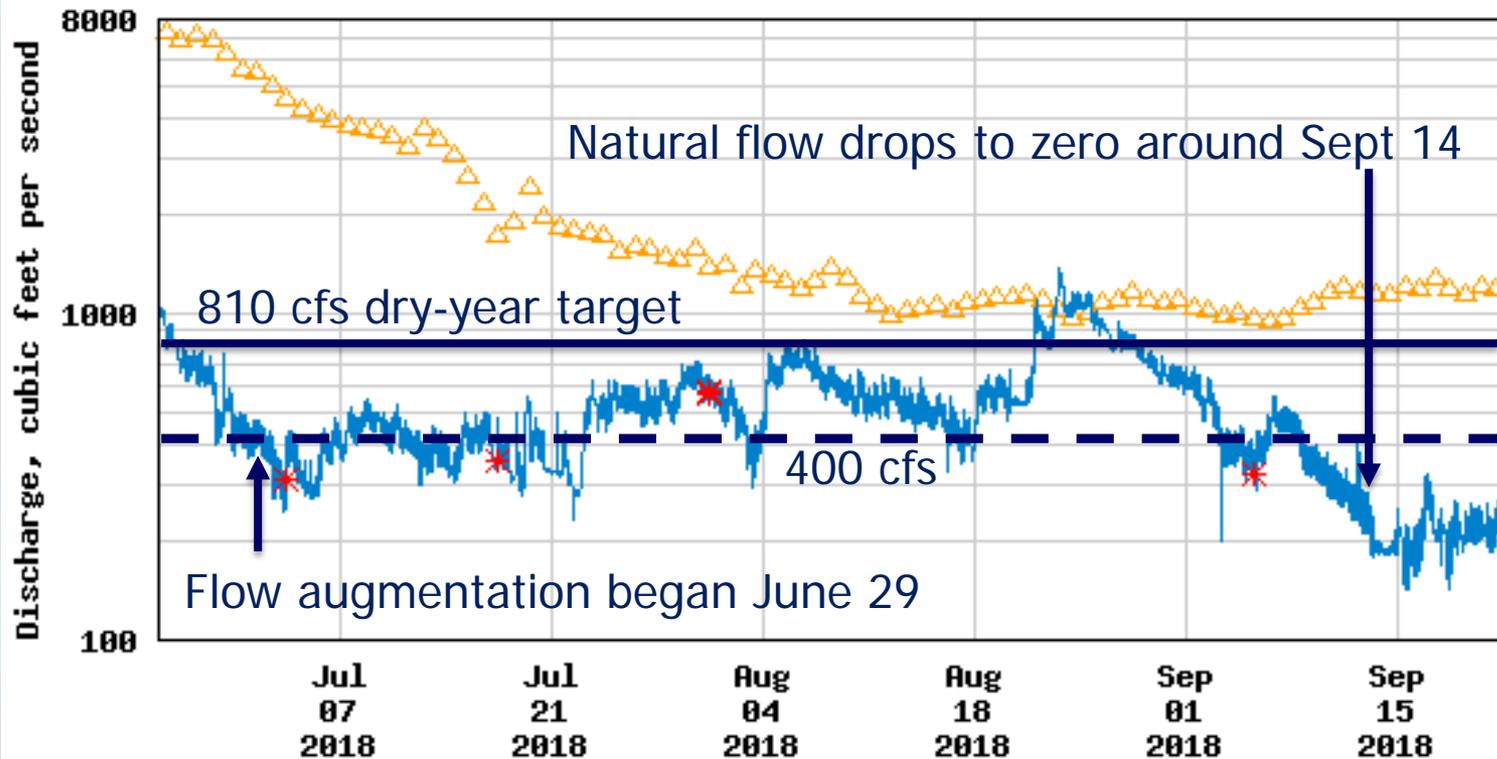
Duchesne River (Randlett, UT)





Colorado River 15-Mile Reach

USGS 09106150 COLO RIVER BELOW GRAND VALLEY DIV NR PALISADE, CO



----- Provisional Data Subject to Revision -----

- △ Median daily statistic (27 years)
- * Measured discharge
- Discharge



2018 Honor Roll

- Colorado Water Conservation Board
- Ute Water Conservancy District
- Exxon Mobil Corporation
- Colorado River District
- Colorado State Engineer's Office
- Bureau of Reclamation
- Agricultural water users in the Grand Valley

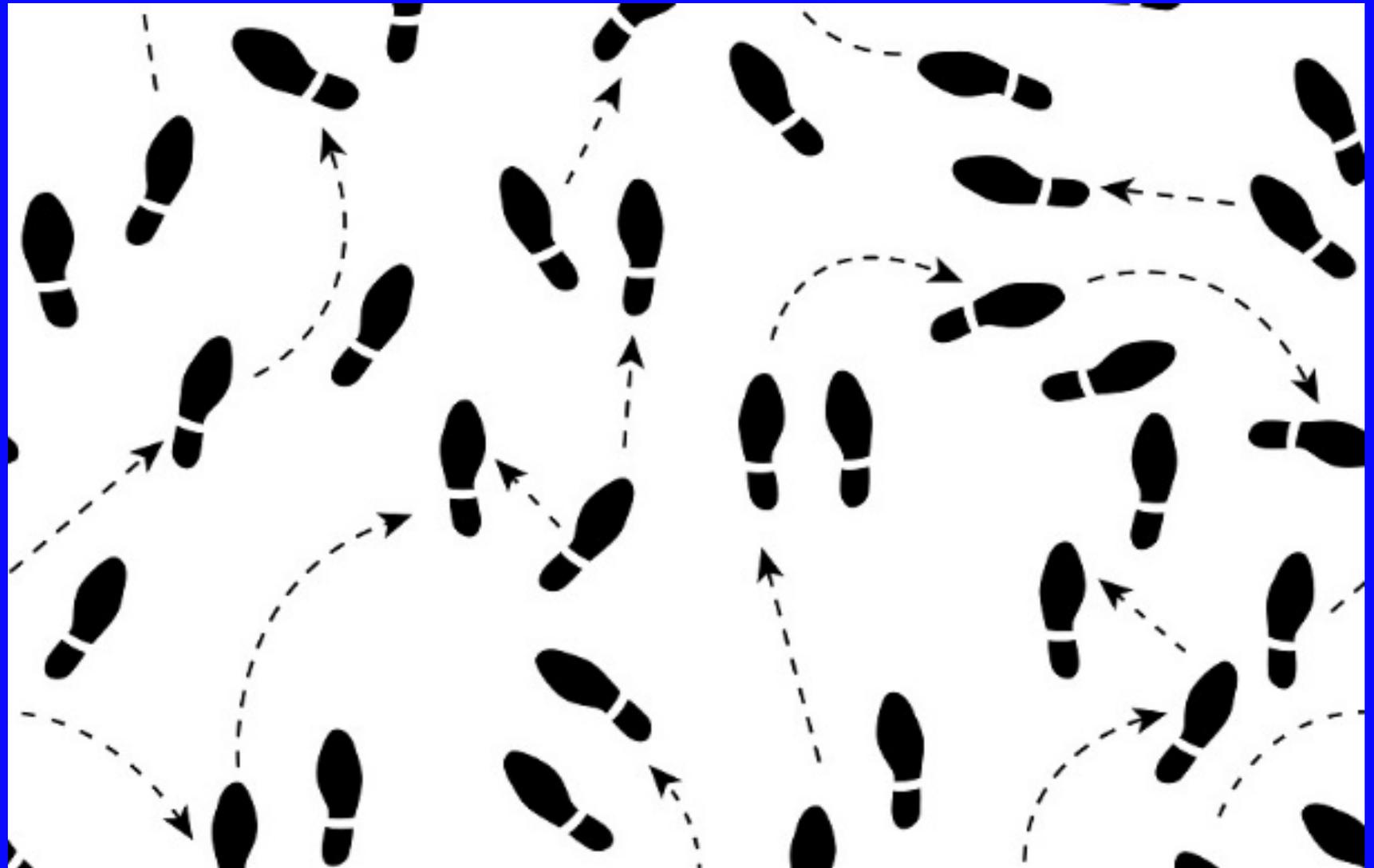




Additional Bright Spots, Looking Ahead ...

- **Colorado River 15-Mile-Reach**
 - Added options for 'April Hole' toolbox
 - Grand Valley irrigators - add'l water for 15MR in 2019(?)
- **Yampa River**
 - Reduced transit losses assigned to Elkhead releases
- **White River**
 - Planning Team meetings & SOW for Management Plan
 - Draft Flow Recommendations now out for review
- **Price River**
 - Funding obtained for water management improvement engineering feasibility studies (by TNC & Utah DNR)

Snow Dance: Steps to learn for Winter 2018-2019





Questions?



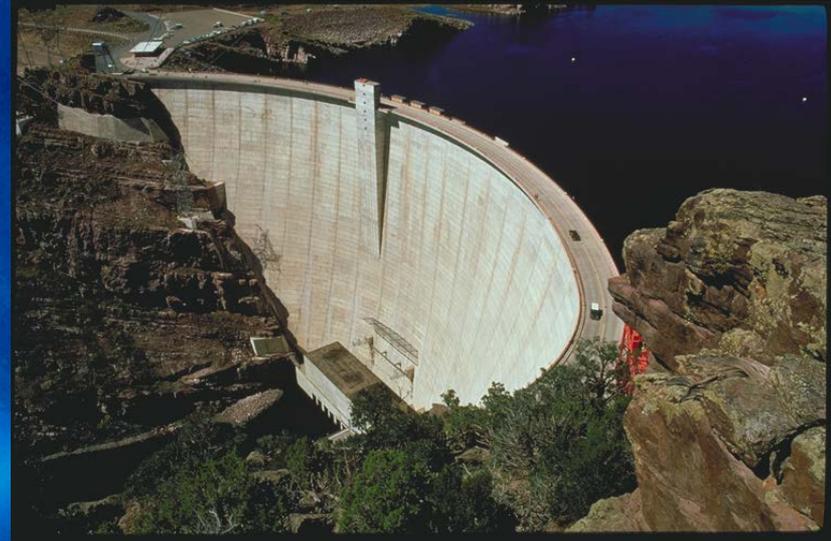
Green River Stakeholders

- Who Are They?

- Green River landowners, tailrace trout fishermen, rafting guides

- What's Their Issue?

- Dwnstrm effects of 'endangered fish' spring releases from Flaming Gorge Dam.



- Their Proposal/ Request

- Cap releases at 4,600 cfs (max power generation); greater res. drawdowns; more T&E hatchery production using private floodplains.
- Greater local input in flow management decisions

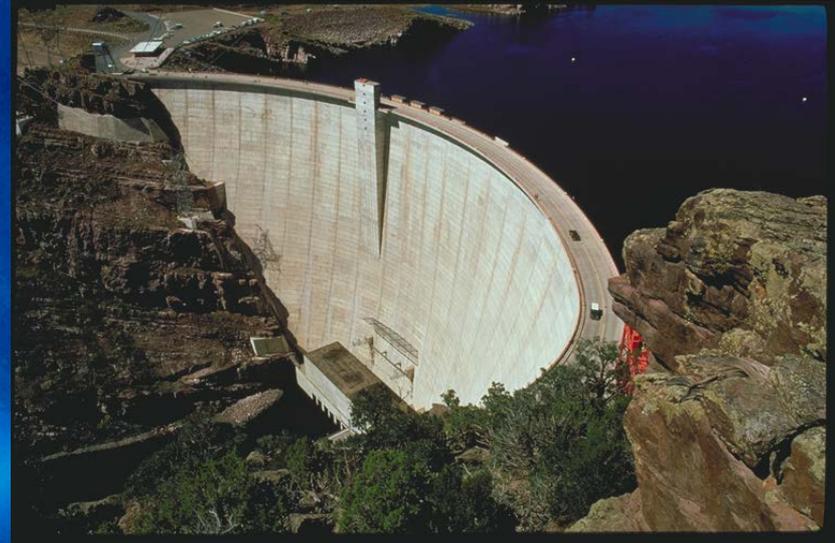


Green River Stakeholders

(next steps)

- BR convenes a Public Mtg, July 20, Vernal, UT

- 75-80 attendees
- BR commits to revising the FGWG process by adding a public mtg in March to specifically solicit local concerns / input into proposed spring operations.



- BR convenes FGWG, Aug 27, Vernal, UT

- Program partners respond to some of the issues raised in July (e.g., limitations / rec'd improvements in flow forecasting, importance of peak flow timing, and review Program stocking program.



Recovery Elements

- Information and Education
- Propagation, Monitoring, and Data Mngmt.
- Instream Flows and Habitat Management
- **Nonnative Fish Management**

Upper Colorado River



Endangered Fish
Recovery Program

Managing Predatory Nonnative Fish:

A Long Term Commitment for Endangered Species Recovery

Kevin McAbee
Nonnative Fish Coordinator



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.



Two-tiered Strategy

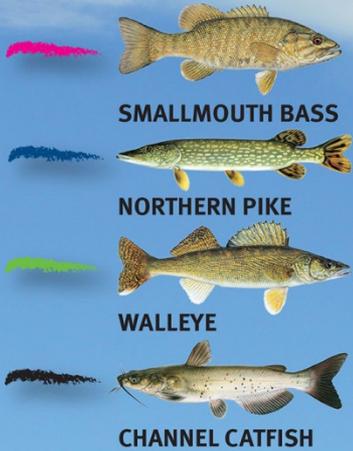
In-River



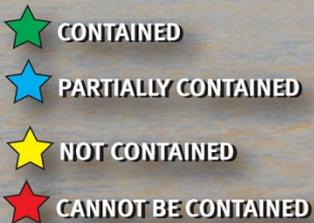
In-Reservoir



IN RIVER REMOVAL



RESERVOIR SOURCES OF NONNATIVE FISH





Two-tiered Strategy

Rivers: native fish recovery areas

- Large scale removal
- Disrupt spawning

Reservoirs: compatible angling opportunities

- Source containment
- Provide replacement fisheries for anglers





In-River Major Accomplishments: 2018

- Continued to perform in-river disruption of northern pike and smallmouth bass spawning

Smallmouth bass electrofishing



Photo: Melanie Fischer

Northern pike gill-netting

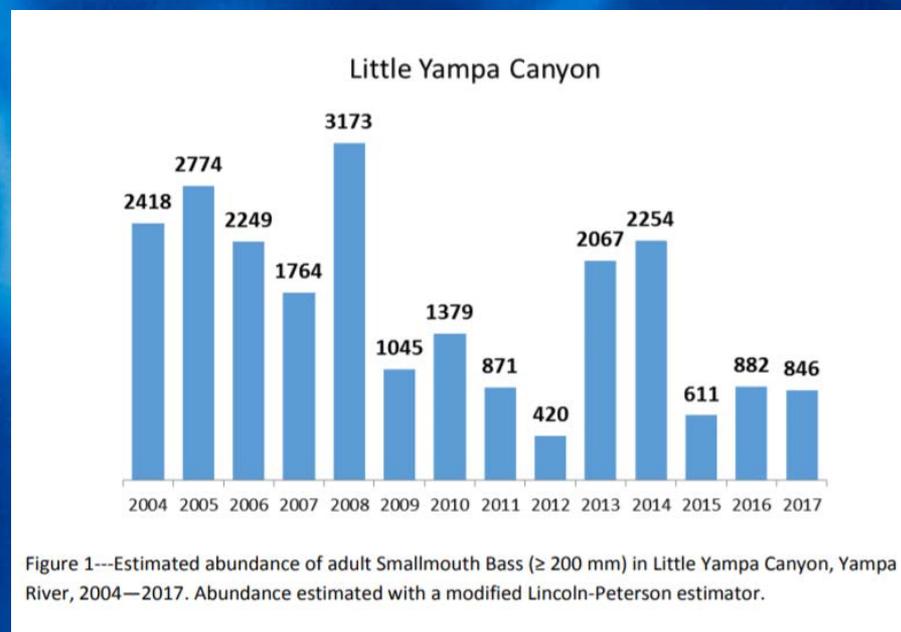
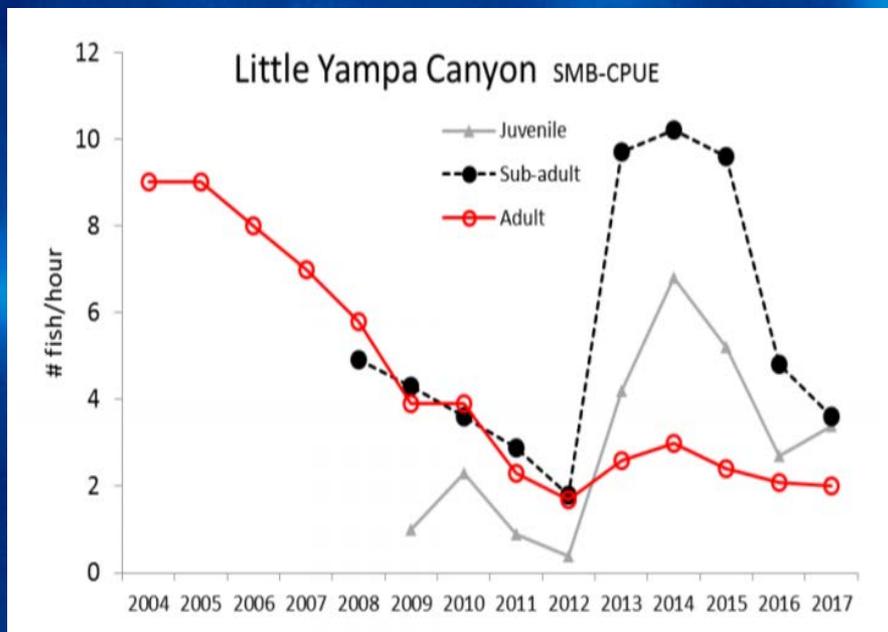


Photo: Tory Eyre



In-River Major Challenges: 2018

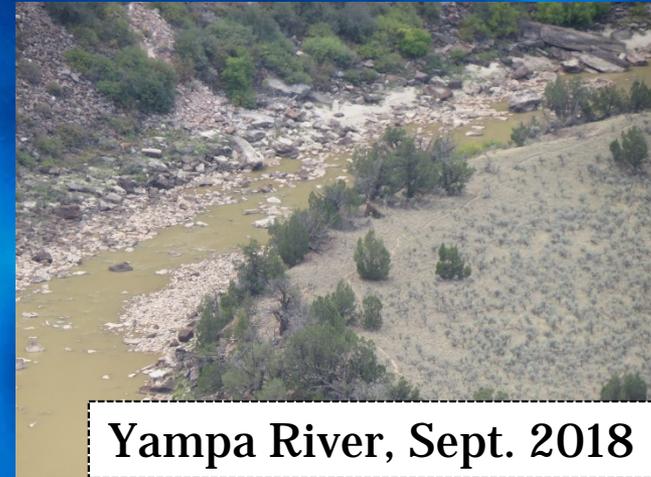
- **Low flows support smallmouth bass production**
 - ✦ Earlier spawning, longer growing season, increased winter survival
 - ✦ 2018 would have a good year to use the 'spike flow' that is under review





In-River Major Challenges: 2018

- **Low flows reduce removal effort applied**
 - ✦ Safety and access issues



Photos: Tildon Jones

- **Funding uncertainty reduced late season effort**
 - ✦ Reduced seasonal staff in September & October in some offices



Reservoir

Major Accomplishments: 2018

- Reservoir screening & lake management in-place at Highline Lake; Rifle Gap, Starvation*, & Elkhead Reservoirs



2018 Free Fishing Tournaments at Elkhead Reservoir State Park and Ridgway State Park





Major Challenges: 2018

- No screening projects completed in 2017 or 2018
 - Four major projects to complete by ~2021



Lake Catamount planning on-hold



Starvation Reservoir planning reset



Major Accomplishments: 2018

- Progress being made on Ridgway and Red Fleet Reservoirs



**Ridgway Reservoir planning:
Value Engineering; contracting and
permitting ready to begin**



**Red Fleet Reservoir planning:
95% design; contracting, and
permitting underway**



Reservoir Projects Delayed, but in Progress

Reservoir	Replacement Species (not exhaustive)	Escapement Solution	Year Complete
Highline Lake	Largemouth bass	Spillway net	1999
Rifle Gap Reservoir	Sterile Walleye	Downstream Screen	2015
Elkhead Reservoir	Largemouth Bass	Spillway net; outlet screens	2016
Starvation Reservoir	Black crappie, sterile walleye	Stilling basin screen	2017* 2020?
Red Fleet Reservoir	Sterile Walleye (2015)	Rotenone treatment; downstream screen	2018* 2019?
Ridgway Reservoir	In-development	Spillway net	2019* 2019?
Stagecoach Reservoir and Lake Catamount	Trout	Spillway net; outlet screen (Catamount)	2020* 2021?



2018 Conclusions

- Environmental conditions made nonnative fish management difficult in 2018
 - Our crews are implementing efficient and effective actions
 - We will likely see influence of 2018 production in future years
- Reservoir screening efforts had stalled, but are resuming
 - Red Fleet and Ridgway Reservoirs are likely the two next projects
 - Lake Catamount and Starvation Reservoirs are less clear

Thank you!
Questions?





Species Compatibility

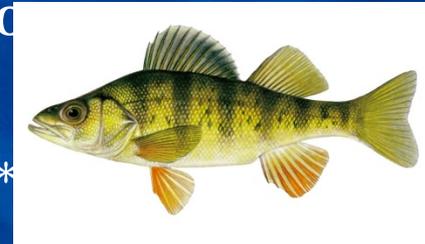
- **Non-Compatible**

- Smallmouth bass
- Northern pike
- Walleye
- White sucker
- Red shiner
- Burbot



- **Compatible**

- Salmonids
- Bluegill
- Black crappie
- Largemouth bass
- Fathead minnow
- Yellow perch
- Palmetto bass*
- Sterile walleye*
- Tiger muskie*



Eliminate



Replacement