

**Upper Colorado River
Endangered Fish
Recovery Program**



and



**San Juan River Basin
Recovery Implementation
Program**

Working Together to Recover Endangered Fishes

The Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program use innovative, cost-effective measures to recover the endangered Colorado river fishes. At the same time, water and hydropower resources are managed within state and federal laws and tribal rights to meet the needs of people in growing western communities.

The recovery programs' partners represent state and federal agencies, water and environmental organizations, power customers, and American Indian tribes. These partners believe that working cooperatively produces far greater results than independent efforts and minimizes conflicts, such as lawsuits over water use.

The recovery programs currently provide ESA compliance for 2,470 water projects depleting more than 3.7 million acre-feet per year. No lawsuits have been filed on ESA compliance for any of these water projects.

Nonnative Fish: The Greatest Threat to Recovery

The overall goal for recovery of the four endangered fishes is to achieve naturally self-sustaining populations and protect the habitat on which those populations depend. The recovery programs implement actions under several recovery elements.

Providing Flows



Stocking Endangered Fish

Managing Nonnative Fish



Restoring Habitat

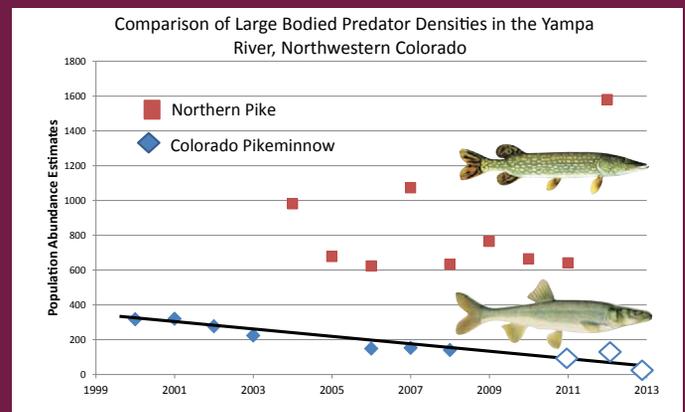
Monitoring Populations



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



Nonnative Predators Delay Recovery



Providing Angler Opportunity and Satisfaction is a Critical Part of Nonnative Fish Management

The Upper Colorado River Endangered Fish Recovery Program and the States of Colorado, Utah, and Wyoming strive to provide angler satisfaction by:

Seeking angler input in management decisions. Angler input provides public support and sportfishing satisfaction.



Photo by Mike Porras, CPW

Public meetings are held to determine what compatible species anglers would like to fish for in Upper Basin reservoirs.

Enacting appropriate fishing regulations. Liberalized fishing regulations make anglers part of the solution.



Photo by Lucy Diggins-Mold, WGF

Tournaments with prizes for catching problematic species promote interest in species removal.

Researching and using new technologies. Stocking fish that cannot reproduce (sterile fish) offers angling opportunity.



Photo by UDWR

Sterile versions of popular sportfish like walleye provide angler opportunity while reducing risk to downstream endangered fish.

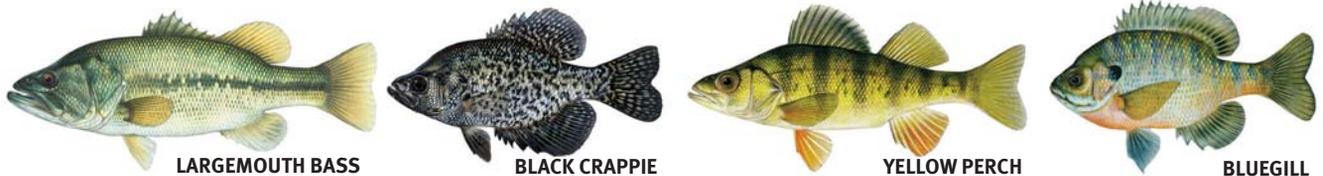
Providing angling opportunities compatible with endangered species recovery. Families can enjoy compatible sportfishing year round.



Photo by Travis Francis, USFWS

Popular sport fish that are compatible with endangered species recovery, such as largemouth bass, are offered to anglers in place of problematic species (see below).

YES - Compatible sportfish can be stocked in reservoirs



LARGEMOUTH BASS

BLACK CRAPPIE

YELLOW PERCH

BLUEGILL



BROWN TROUT



KOKANEE



RAINBOW TROUT



HYBRID STRIPPED BASS (STERILE FISH)



WALLEYE (STERILE FISH)

...and many others!

NO - Incompatible sportfish cannot be stocked in reservoirs



SMALLMOUTH BASS



WALLEYE (FERTILE FISH)



NORTHERN PIKE



BURBOT



In 2014, biologists began gill netting connected backwaters in the upper Yampa River, to remove northern pike before they could spawn.



Photo by Ray Tenney, Colorado River District

In 2016, Upper Colorado Program partners installed a 9mm mesh net in the Elkhead Reservoir spillway channel to prevent nonnative northern pike and smallmouth bass escaping to the Yampa River while maintaining an important regional sport fishery.



Multi-agency crews coordinate smallmouth bass removal efforts in the Yampa, White, Green, and Colorado rivers timed specifically to target spawning adults.

IN RIVER REMOVAL

-   **SMALLMOUTH BASS**
-   **NORTHERN PIKE**
-   **WALLEYE**
-   **CHANNEL CATFISH**

RESERVOIR SOURCES OF NONNATIVE FISH

-  **CONTAINED**
-  **PARTIALLY CONTAINED**
-  **NOT CONTAINED**
-  **CANNOT BE CONTAINED**



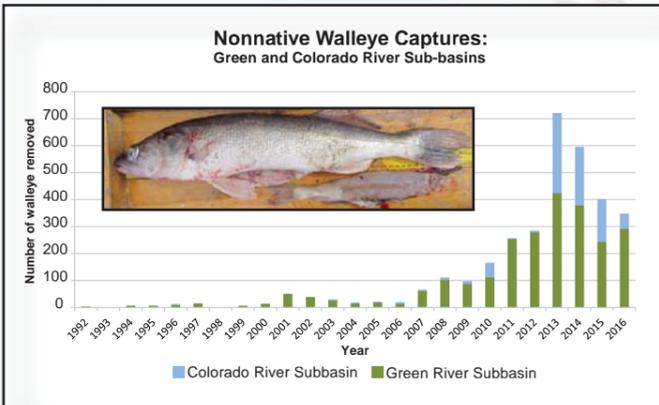
WHY ARE CERTAIN NONNATIVE FISH A PROBLEM?

PREDATION AND COMPETITION



Photo by Mark Watson, UB Media

Utah Division of Wildlife chemically treated Red Fleet Reservoir in 2015 to remove an illegally introduced population of walleye that was escaping to the Green River.



Distribution and abundance of nonnative walleye has increased dramatically in the past 8 years throughout the Upper Colorado River Basin. Inset photo – the remains of an endangered Colorado pikeminnow removed from the stomach of a walleye.



San Juan River researchers report declines in both juvenile and adult nonnative channel catfish in river reaches where the greatest amount of removal occurs.



HIGH REPRODUCTION POTENTIAL

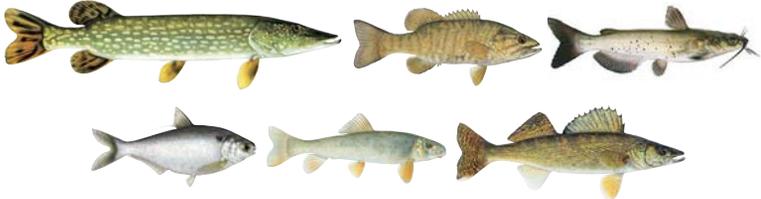
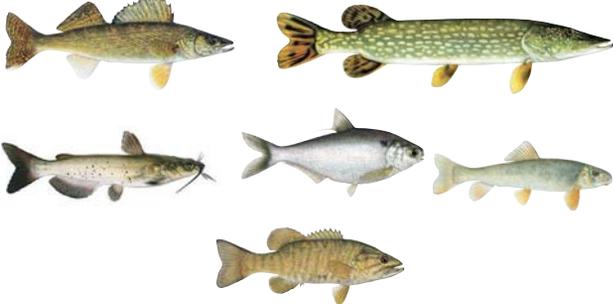
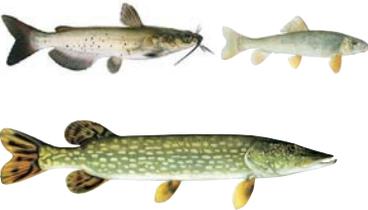
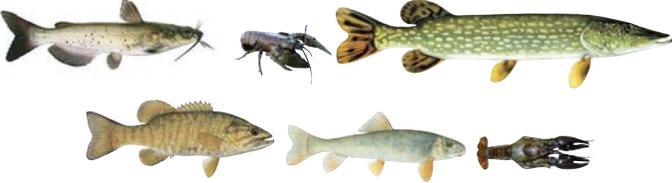


High Reproduction Leading to Competition

Predators in Shared Habitats

Nonnative Predators Delay Recovery in the Upper Colorado River

Predation or competition by nonnative fish species is the primary threat to endangered fish recovery and the most challenging threat to manage. One hundred years ago only 13 native fish species swam in the Upper Colorado River and its tributaries – today they have been joined by more than 50 nonnative species. The graphic below depicts the spread of a few of the most predaceous and invasive species through the life of the Upper Colorado and San Juan Programs.

River	Presence of Invasive Species	
	Program Inception	Today
Colorado		
Gunnison		
Green		
White		
Yampa		
San Juan		

*Rusty crayfish photo courtesy of the United States Geological Survey
Virile Crayfish photo courtesy D. Gordon E. Robertson
Fish Illustrations © Joseph R. Tomelleri*

Legend

Channel catfish	Gizzard Shad	Northern pike	Rusty crayfish	Smallmouth bass	Virile crayfish	Walleye	White sucker
							

For more information visit:
coloradoriverrecovery.org
fws.gov/southwest/sjrip

What's Next?

Renovating Reservoir Fisheries

Because problematic nonnative predators continue to escape from reservoirs into downstream endangered fish habitat, Upper Colorado Program partners are working to eliminate those species from reservoirs. However, we are committed to providing desirable fishing opportunities in these reservoirs as long as they do NOT contain the most problematic species: **smallmouth bass, fertile walleye, northern pike, and burbot.**

Eradication: Actions to remove problematic nonnative predators from reservoirs include liberalized harvest regulations, agency removal of fish, and chemical treatment.

Stock and Manage Desirable Species: Many desirable sport fish species are compatible with endangered species recovery. The recovery programs support introducing populations of trout, largemouth bass, black crappie, palmetto bass (wipers), tiger muskie, and sterile walleye, among others, in renovated reservoirs to provide local communities with popular fishing locations.

Escapement Prevention: Installation of barriers, such as nets or screens, is required to prevent escapement of predatory species into the river. Recovery Program partners have successfully installed these barriers at Elkhead, Rifle Gap, and Starvation Reservoirs, and plan to install others across the basin.



Recreation at Elkhead Reservoir



Electrofishing on the Yampa River



Net installation at Elkhead Reservoir



The beautiful Yampa River

Expanding In-River Removal

The Upper Basin has expanded its in-river removal efforts for smallmouth bass, northern pike, and walleye from 6 to 600 miles over the past 15 years. Efforts primarily focus on preventing reproduction and removing adult fish.

Eradication: Angler removal of these most problematic predators from rivers and reservoirs assists species recovery. Utah and Wyoming both have implemented a "catch and kill" policy, and Colorado has no limit to catch, for the most problematic nonnative predators in upper Colorado basin rivers.

Preventing the Spread of Nonnative Species

Introduction and establishment of problematic nonnative predators affect native fishes, the Upper Colorado Program, anglers, and local communities with high environmental and economic costs. Actions required to remove illegally-introduced species are expensive and time-consuming. We must all partner to prevent the spread of these problematic nonnative predators in order to preserve native fish in the river and desirable sport fisheries in the reservoirs.