



Stephen D. Guertin, Chairman
Implementation Committee

Upper Colorado River Endangered Fish Recovery Program

Thomas E. Chart
Program Director

U.S. Fish and Wildlife Service - P.O. Box 25486 - Denver Federal Center - Denver, CO 80225 - (303) 969-7322 - Fax (303) 969-7327

Nonnative Fish Management Questions and Answers – 2012 (Colorado)

What is the Upper Colorado River Endangered Fish Recovery Program?

Established in 1988, the Recovery Program is a voluntary, cooperative partnership involving state and federal agencies, environmental groups and water and power user organizations in Colorado, Utah and Wyoming. Its purpose is to recover the endangered humpback chub (*Gila cypha*), bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*) and razorback sucker (*Xyrauchen texanus*) while water development proceeds in accordance with federal and state laws.

How will recovery of the endangered fishes affect present and future water development?

Progress toward recovery of the endangered fishes enables use and development of water from the Upper Colorado River Basin (Upper Basin) to proceed in compliance with the Endangered Species Act (ESA). Since 1988, recovery actions implemented by the Recovery Program have provided ESA compliance for 2,001 water projects depleting more than 2.8 million acre-feet of water in the Upper Basin. Every year the U.S. Fish and Wildlife Service evaluates the status of fish populations, as well as recovery actions such as flow management, habitat restoration, nonnative fish management, and stocking endangered fishes to determine if the Recovery Program can continue to provide ESA compliance for water use and development.

Why should anyone care about saving the endangered fishes?

These “big-river” fishes evolved 3-5 million years ago and are found in the Colorado River Basin and nowhere else in the world. They are part of our cultural heritage and southwestern lore and were once so abundant that American Indians and early settlers relied on them for food. Saving the endangered fish will result in healthy river ecosystems, which in turn supports a variety of wildlife species that rely on these rivers in these arid climates.

Scientific research has shown that losing one species in an ecosystem can cause a chain reaction affecting a series of other living things. Because the endangered Colorado River fishes have evolved over millions of years and survived significant changes in the river system, biologists consider them “indicator species.” Like the coalminer’s canary, whose death forewarns workers of toxic gases underground, the decline of these fish species may be a warning that other native species of the Colorado River ecosystem also are at risk.

An endangered species is one that is “in danger” of extinction- *in jeopardy of disappearing from earth forever* - throughout all, or a large portion of, its habitat. Because these fishes are so rare, they are protected by state laws and the federal Endangered Species Act (ESA). In passing the ESA, Congress reflected society’s belief that rare species should be saved whenever possible.

Why are these fish species endangered?

Numerous changes in the river environment since the early 1900s affected certain native plants and animals. Among those changes, the installation of dams, removal of water for human use, and introduction of nonnative sport fishes like northern pike, smallmouth bass and channel catfish have contributed to the decline of native fish species.

What needs to be done to recover the endangered fishes?

As the Department of the Interior agency responsible for administering the Endangered Species Act, the U.S. Fish and Wildlife Service has prepared recovery goals that identify site-specific management actions to minimize or remove threats and specify the numbers of fish required for self-sustaining populations. The recovery goals identify nonnative fishes in the Colorado River system as a primary threat to the continued existence or reestablishment of self-sustaining endangered fish populations. The goals detail actions to minimize impacts from nonnative fishes including preventing their access to critical habitat for endangered fishes and reducing their numbers through removal. In other cases, installing fish screens may prevent or control escapement of nonnative fishes from ponds and reservoirs into the river where they might interact negatively with the endangered fishes.

Nonnative fish management is only one piece of the recovery puzzle. Recovery efforts are also underway to provide river flows, restore habitat, construct fish screens and maintain and operate fish passages, produce and stock endangered fish, and monitor results.

Downlisting of the fishes from “endangered” to “threatened” and removing the species from Endangered Species Act protection (delisting) will be considered once the necessary management actions are achieved and the fish populations have met recovery goal criteria.

What are the nonnative fish species of primary concern?

Although there are more than 50 nonnative fish species in the Upper Colorado River Basin, northern pike (*Esox lucius*), smallmouth bass (*Micropterus dolomieu*) and channel catfish (*Ictalurus punctatus*) are the species considered to pose the greatest threat to the endangered fishes.

Why are these particular species targeted for research and removal?

Every species has a native range. Smallmouth bass, northern pike and channel catfish have huge native ranges throughout the United States and, in some cases, beyond. Throughout their native ranges they are managed and valued as highly sought after sportfish - as they should be. However, in the past 30 years fishery biologists have become aware of the devastating impacts that can occur when a species is moved out of its native range.

Nonnative species (eg. Asian carp in the Mississippi River, common carp throughout North America, the snakehead along the east coast, and smallmouth bass, northern pike and channel catfish in the Colorado River) are disrupting ecosystems in virtually every drainage throughout North America. The Colorado River is just one of many river systems where nonnative fish must be controlled.

Why are these particular species targeted for research and removal? (continued)

The Colorado River system only has enough space and food to support a certain number of aquatic species. During the last century, the introduction of nonnative fishes, combined with changes in river habitat, has led to an imbalance in the river system, creating a situation where nonnative fishes prey upon native fish and, in some cases, out-compete them for food and space. Native fish populations suffer as a result.

Research shows that northern pike, smallmouth bass, and channel catfish pose a significant threat to the endangered fishes. All three species are known to eat other fish. Since being introduced into the Colorado River Basin their range has expanded, overlapping that of the endangered fishes and increasing the potential for negative interactions. These nonnative species are active predators and will consume relatively large prey, including endangered fishes.

The three target species have joined Colorado pikeminnow as top predators of the Upper Colorado River Basin and now dominate portions of the system. The abundance and range of these nonnative species continues to increase.

Some of the introduced nonnative species have not flourished in the system and are rarely encountered. Others may be common to abundant in localized habitats where they do not interact with the endangered fishes on a large scale. Species that do not eat fish may compete for food and space with endangered fishes. Some nonnative fish species are abundant and widespread, but only grow to two inches in length. Although they may feed on fish eggs and larvae, they are too small to eat the larger endangered fishes.

To date, other nonnative fish species have not been managed because they pose less of a threat to endangered fishes than the three targeted species. As the nonnative fish management program has grown, researchers now believe there may be an opportunity to manage other nonnative fish species of concern.

In 2012, the Recovery Program plans to remove white sucker (*Catostomus commersoni*) and common carp (*Cyprinus carpio*) in a portion of the Yampa River. White sucker are known to hybridize with native flannelmouth sucker (*Catostomus latipinnis*) and bluehead sucker (*Catostomus discobolus*) and the endangered razorback sucker. Common carp compete for resources with all native species.

What is the Recovery Program doing to reduce the threat of nonnative fishes to the endangered fishes?

The Recovery Program's overall goal of nonnative fish management is to attain and maintain fish communities where populations of endangered fish species can persist and thrive, and the recovery goals for the endangered fishes can be achieved. All actions involve research to identify the levels of management needed to achieve and sustain recovery. In addition, actions must increasingly focus on preventing new nonnative aquatic species from entering the Colorado River system. Actions include:

Actively Removing Nonnative Fish: Intensive efforts are made each year to remove nonnative fish species of greatest concern. (*See related question on page 5: When and where will work occur in 2012?*)

Managing Summer Flows to Hinder Nonnative Fish Reproduction: The Colorado River District works with the Recovery Program to release "fish water" from Elkhead Reservoir in northwest Colorado to provide habitat conditions better suited for the native fish.

**What is the Recovery Program doing to reduce the threat of nonnative fishes to the endangered fishes?
(continued)**

Screening Pond and Reservoir Outlets and Berming Ponds: These actions help prevent nonnative fish from escaping from ponds and reservoirs and entering the river where they could pose a threat to endangered fishes. For example:

- A barrier net at Highline Lake in western Colorado reduces escapement of nonnative sportfish and allows the lake to be managed for warmwater sportfishing.
- Requiring screens for the outlets of private ponds which will be stocked with approved, nonsalmonid fish species.

Regulating Stocking and Changing Fishing Regulations: In 2009, the states of Colorado, Utah and Wyoming and the U.S. Fish and Wildlife Service renewed their longstanding (since 1996) commitment to sportfish management that is compatible with endangered species recovery through enactment of revised Nonnative Fish Stocking Procedures. Colorado, Utah and Wyoming also have bag and possession limits to increase harvest of the nonnative fish species of greatest concern to reduce their negative impact on native and endangered fishes.

Colorado encourages harvest of nonnative, non-salmonid sportfishes in river and tributary segments within, and upstream of, critical habitat for endangered fishes to help protect native and endangered fish populations in the Colorado and San Juan River basins. Many creeks, streams and rivers allow unlimited take of nonnative fish including channel catfish, largemouth bass, smallmouth bass, northern pike, walleye, green sunfish, bluegill, bullhead, yellow perch or crappie. This regulation covers sections of the following rivers: Animas, Blanco, Colorado, Dolores, Eagle, Florida, La Plata, Los Pinos, Mancos, Navajo, Piedra, San Juan, San Miguel and White, as well as McElmo Creek. Colorado recently added burbot to the state's list of prohibited species.

Utah enlists the help of anglers by instituting a “must kill” policy for nonnative smallmouth bass caught in the Green River and for invasive burbot caught in any waters of the state.

Wyoming has an unlimited bag limit for burbot and walleye in the Green River Basin in the southwest corner of that state, which lies within the Upper Colorado River Basin.

Identifying the Sources of Nonnative Fish: Otoliths (fish ear bones) contain naturally occurring markers which reveal clues about where a fish lived during specific times of its life. This information helps identify problematic sources of invasive or illegally stocked fishes and helps determine the most cost-effective and efficient methods of preventing nonnative fish from gaining access to habitats occupied by the endangered fish.

Developing a Long-Term Commitment to Prevention: Since 2010, the Recovery Program has focused on developing a long-term commitment to **prevention** as well as a re-commitment to directing management actions at the sources (spawning areas) of problematic nonnative fish species.

How are results evaluated?

Researchers estimate the size of northern pike and smallmouth bass populations to evaluate removal efforts and to measure progress toward reducing the abundance of these problematic species.

The Recovery Program also monitors native fish populations to determine if they are responding favorably to nonnative fish management actions. Researchers from Colorado State University report that the young of several native fishes continue to increase in abundance in the Yampa River.

What organizations will conduct the nonnative fish research and management activities on the ground?

Three of the Recovery Program partners – the states of Colorado and Utah and the U.S. Fish and Wildlife Service – will conduct nonnative fish research and management activities in the field. Biologists from the Larval Fish Laboratory at Colorado State University and the Ute Indian Tribe Fish and Wildlife Department will also participate.

When and where will work occur in 2012?

Work will take place from March through October in more than 500 miles of river in the Upper Colorado River Basin. Specific river reaches include the:

- Green River from Brown's Park to the Bureau of Land Management (BLM) boat launch at Swasey's Rapid
- Colorado River between Silt, Colorado, and the Westwater boat landing near the Colorado-Utah state line, including the lower two miles of the Gunnison River below the Redlands Diversion Dam
- Yampa River from the bridge upstream of Hayden, Colorado, downstream to the Green River confluence in Dinosaur National Monument
- Duchesne River (tentative) from Myton, Utah, to the Green River confluence
- White River from Taylor Draw Dam, Colorado, downstream to the BLM Enron boat ramp in Utah.

These sections of river were selected because they provide important habitat for the recovery of the endangered fishes, and/or they include source areas of target species.

What will happen to the nonnative fishes that are removed?

In Colorado

Northern pike removed from the Yampa River during high flows from Craig to Dinosaur National Monument will be relocated to the Yampa State Park Headquarters pond to provide angling opportunity for the public. Northern pike captured during low flows in July will be removed and euthanized because river travel at low flows takes too long to keep them alive until they can be relocated. All other nonnative species will be euthanized.

In Utah

All targeted nonnative fishes (smallmouth bass, northern pike, white sucker and burbot) will be euthanized.

Will nonnative fish management reduce sportfishing opportunities in the Colorado River Basin?

The Recovery Program recognizes the dual responsibilities of state and federal fish and wildlife agencies to conserve listed and other native species while providing for sportfishing opportunities. The Recovery Program works with the states of Colorado, Utah and Wyoming to support recreational angling by adhering to state management plans for the river system. Efforts are made to implement management actions that will lessen the impact on sportfishing opportunities. In the Yampa River, efforts will be made when practical to relocate northern pike to local ponds that are publicly accessible to anglers.

Other management actions are being taken to reduce the threat of nonnative fishes to endangered fishes while maintaining sportfishing. In 1999, the Recovery Program installed a fish screen at Highline Lake in western Colorado to help prevent nonnative fishes stocked in the lake from escaping into the river where they might interact with endangered fishes. This allowed the state of Colorado to stock the lake with warmwater sportfish. The use of sterile, warmwater fish is also being considered to allow continued management of nonnative predatory fishes in approved and secure locations.

These types of innovative actions can help ensure that sportfishing opportunities are maintained in communities within the Upper Colorado River Basin, while reducing the potential for nonnative fishes to adversely affect native species.

Why were nonnative fish species introduced into the Colorado River system?

Sixty-seven nonnative fish species have been introduced into the Colorado River Basin since the 1880s. At least 36 fish species, mostly game fishes from the eastern United States, were introduced between 1930 and 1950. Some species were intentionally introduced by state and federal agencies to address public demand for sport fisheries during that time. Unfortunately, unauthorized introduction of other nonnative fishes also occurred.

Unintentional introductions occurred when some species, which had been intentionally stocked in ponds and reservoirs for sportfishing, subsequently escaped into the river system. Some of these escapees successfully established self-sustaining populations in areas occupied by native fishes.

Why are some of the same agencies that introduced nonnative fishes to the river system now working to remove them?

Up until the mid-twentieth century the public's values and priorities did not emphasize preservation of native species and the environment. Over time, society's attitudes toward native species and their environments changed. In 1973, the federal Endangered Species Act (ESA) was signed into law. The ESA represents America's concern about the decline of many plant and animal species. Its purpose is to conserve and recover species and the ecosystems on which they depend.

Why are some of the same agencies that introduced nonnative fishes to the river system now working to remove them? (continued)

Since passage of the ESA and other environmental laws, state and federal governments have responsibilities for both endangered species and sportfish management. The agencies are charged with addressing impacts of nonnative fishes on endangered fishes.

What can be done to prevent the introduction of nonnative aquatic species in the future?

Researchers continue to discover new nonnative aquatic species during the course of their work. Invasive crayfish (a favored food item for nonnative smallmouth bass) are found in waters that drain to the upper Colorado River in northwest Colorado. In 2010 nonnative burbot were discovered in the Green River below Flaming Gorge Reservoir in Utah. Also in Utah, walleye were illegally introduced in Red Fleet Reservoir, located on a tributary to the Green River.

Through public education efforts, state and federal agencies are alerting the public of the devastating effects that an illegal “bucket transfer” of a nonnative species can have on both sportfishing and native fish communities. Agencies are also stressing the importance of people adhering to current state and federal regulations and reporting any violations to the appropriate agency.

Fishery and law enforcement personnel in the states of Colorado, Utah and Wyoming, and with the U.S. Fish and Wildlife Service, continue to work with the Recovery Program to develop and implement strategies to further combat the problem of illegal introductions of fish in the Upper Colorado River Basin. The strategies may include increased penalties for illegal introductions; such that penalties match the damages that can result.

Will nonnative fish research and management benefit other native fish species?

Nonnative fish management may also benefit other native fish species such as the roundtail chub (*Gila robusta*), bluehead sucker *Catostomus discobolus*, flannelmouth sucker *Catostomus latipinnis*, and speckled dace (*Rhinichthys osculus*), mountain whitefish (*Prosopium williamsoni*) and mottled sculpin (*Cottus bairdi*). Rapidly increasing numbers of nonnative fish currently dominate the Upper Colorado River system resulting in a decline of the native species. By working proactively to maintain balance in the river system, it is hoped that these native fish species will not require state or federal protection as threatened or endangered.

Where can I get more information?

Upper Colorado River Endangered Fish Recovery Program (ColoradoRiverRecovery.org)

Debbie Felker
P.O. Box 25486, DFC
Denver, CO 80225
303-969-7322, ext. 227
debbie_felker@fws.gov

Pat Martinez
764 Horizon Drive, Bldg. B
Grand Junction, CO 81506
970-245-9319, ext. 41
patrick_martinez@fws.gov

Where can I get more information? (continued)

Colorado Parks and Wildlife (wildlife.state.co.us)

Randy Hampton
6060 Broadway
Denver, CO 80216
303-291-7482
randy.hampton@state.co.us

U.S. Fish and Wildlife Service (mountain-prairie.fws.gov/ea)

Dale Ryden
Colorado River Fishery Project
764 Horizon Drive, Bldg. B
Grand Junction, CO 81506
970-245-9319, ext. 25
dale_ryden@fws.gov

4/3/2012