



Upper Colorado River Endangered Fish Recovery Program

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Nonnative Fish Management Questions and Answers – 2010 (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 to proceed in compliance with the Endangered Species Act (ESA). Since 1988, recovery actions implemented by the Recovery Program have provided ESA compliance for 1,711 water projects depleting approximately 2.8 million acre-feet of water in the Upper Basin. Status of fish populations, as well as recovery actions such as flow management, habitat restoration, nonnative fish management, and stocking endangered fishes are the measures the U.S. Fish and Wildlife Service uses to determine if progress toward recovery of the endangered fish is sufficient to allow the Recovery Program to 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.

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.

Why should anyone care about saving the endangered fishes? (continued)

An endangered species is one that is “in danger” of extinction 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 reducing their numbers through removal and relocation. In other cases, installing fish screens may be sufficient to prevent escapement of nonnative fishes from ponds and reservoirs into the river where they might interact 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?

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.

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

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 introduction into the Colorado River Basin, their range has expanded to overlap with that of the endangered fishes, resulting in increased 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 2010, 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 and other native fish species can persist and thrive, and the recovery goals for the endangered fishes can be achieved. All actions involve research studies to identify the levels of management needed to achieve and sustain recovery. 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 2010?*)

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 help reduce smallmouth bass reproduction in the lower Yampa River.

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

Screening Reservoir Outlets and Berming Ponds: These actions 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 sportfishing.
- Similarly, screens on outlets at Elkhead Reservoir in northwest Colorado reduce escapement of nonnative sportfish.

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 and Utah also changed bag and possession limits to increase harvest of the nonnative fish species of greatest concern to reduce their impact on endangered fishes.

Identifying the Sources of Nonnative Fish: Biologists are studying otoliths (fish ear bones) which reveal clues about where a fish lived during specific times of its life. This information will help determine the most cost- effective and efficient methods of preventing nonnative fish from gaining access to habitats occupied by the endangered fish.

How are results evaluated?

The Recovery Program has developed interim nonnative fish removal targets – 30 adult smallmouth bass per mile and 3 adult northern pike per mile. At the start of each sampling season, researchers estimate the size of northern pike and smallmouth bass populations to evaluate the previous years' removal efforts and to measure progress toward meeting these targets.

The Recovery Program also monitors native fish populations to determine if they are responding favorably to nonnative fish management actions. In 2009, researchers from Colorado State University reported that young native roundtail chub were more abundant in Yampa River shoreline samples than in the past five years.

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 Colorado State University will also participate.

When and where will work occur in 2010?

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

- Green River from Brown's Park to the BLM boat launch at Sand Wash.
- Colorado River between Rifle, Colorado, and the Westwater boat landing near the Colorado-Utah state line
- Yampa River from the bridge upstream of Hayden, Colorado, downstream to the Green River confluence in Dinosaur National Monument
- Duchesne River from Myton, Utah, to the Green River confluence

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

What will happen to the nonnative fishes that are removed?

In Colorado

Smallmouth bass (10 inches or larger) that are removed from the Yampa River upstream of Dinosaur National Monument are relocated to Elkhead Reservoir. Northern pike removed from the same stretch of river are relocated to area fishing ponds to provide sportfishing opportunities.

Largemouth bass (10 inches or larger) removed from the Colorado River will be relocated to Highline Lake near Grand Junction, Colorado.

All channel catfish (15 inches or larger) removed from the Yampa River within Dinosaur National Monument will be euthanized. Smaller fish will be returned to the river.

White sucker and common carp removed from the Yampa River will be euthanized.

Some smallmouth bass removed will be provided to the Colorado Division of Wildlife (CDOW) for a stable isotope study to determine their origin. A few smallmouth bass will be marked and returned to the river as part of another research study to track their movement in critical habitat.

A few northern pike will be provided to CDOW for a stable isotope study.

In Utah

All targeted nonnative fishes (smallmouth bass, northern pike, channel catfish) will be euthanized. Fish are not relocated to other waters because Utah adheres to a strict policy to prevent transfer of fish diseases from one area to another.

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 locations where nonnative fishes will be removed, efforts will be made wherever practical to relocate these fish to local ponds and reservoirs 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 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 sportfish.

In addition, the state of Colorado has removed bag/possession limits on northern pike, channel catfish and smallmouth bass in the entire Yampa River and in the Colorado, Gunnison and White rivers. Anglers should refer to state fishing regulations for more information.

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.

Recovery of the endangered fishes may ultimately unencumber some level of sportfish management in these river basins, and some of these endangered fish may one day actually provide new fishing opportunities. Historically, early settlers eagerly fished for these 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 sportfisheries 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.

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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.

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*). 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?

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