

1992 WASHINGTON, D.C. BRIEFING

**RECOVERY IMPLEMENTATION PROGRAM
FOR ENDANGERED FISH SPECIES
IN THE UPPER COLORADO RIVER BASIN**

MISSION

The Recovery Implementation Program is an interagency consortium of Federal-State-private groups whose mission is to recover the endangered fish species in the Upper Colorado River Basin while allowing for new water development to proceed.

PROGRAM PARTICIPANTS

U.S. Fish and Wildlife Service
U.S. Bureau of Reclamation
Western Area Power Administration
State of Colorado
State of Utah
State of Wyoming
Colorado Water Congress

Utah Water Users Association
Wyoming Water Development Association
National Audubon Society
Environmental Defense Fund
Colorado Wildlife Federation
Wyoming Wildlife Federation
Colorado River Energy Distributors
Association

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Recovery Implementation Program Washington D.C. Trip Participants

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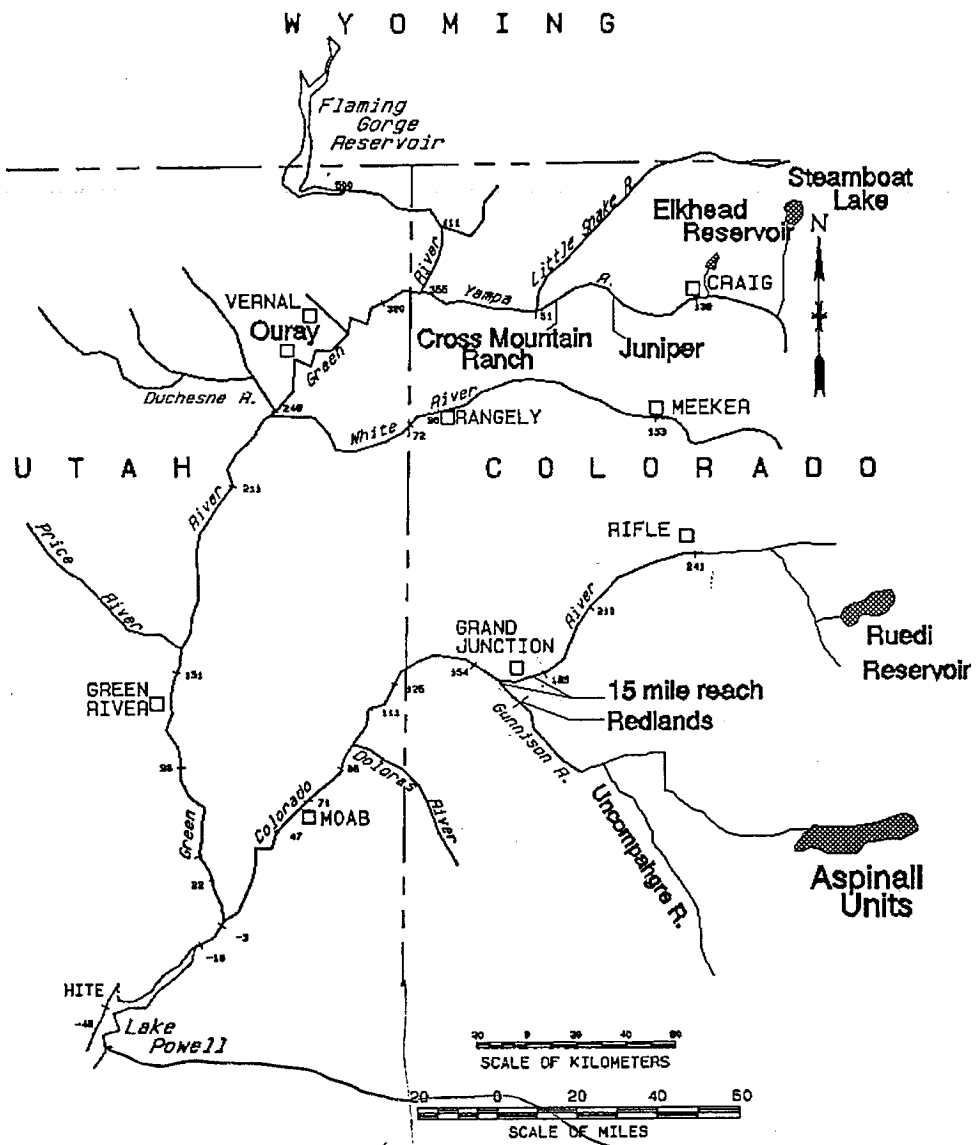


FIGURE 1. Upper Colorado River Basin Recovery Program Activities

UPDATE
Colorado River Endangered Fish
Recovery Program

April 1992

A. Population Status

Species	River		
	Green	Yampa	Colorado
Colorado squawfish	Stable/Increasing	Stable/Increasing	Stable/decreasing Small
Humpback chub	Stable?/ Small	Stable?/ Small	Stable/ Healthy
Razorback sucker	Critical--Few adults	--	No Recruitment
Bonytail chub	Critical--Very rare	--	No Recruitment

B. Program Management

Goal: Ensure effective implementation and coordination of the Recovery Program

- Status:**
- o All parties actively participating in various technical and Management Committees
 - o Program fully funded (\$4.1 million in FY 92)
 - o Strategic or long-range plan for the Program being developed
 - o Efforts to refine recovery goals/objectives for each species are underway (FWS and Colorado)
 - o Increase emphasis in FY 93 on recovery activities that will directly (positively) impact fish populations:
 - Restoration of flooded bottomlands
 - Control of nonnatives
 - Minimize impacts of sampling
 - o Colorado River Energy Distributors Assoc. added as a nonvoting committee member

Additional Comments: For FY 92 appropriations, Congress added \$250,000 to the Service's budget for the Recovery Program. \$200,000 is included in the President's FY 93 budget.

C. Habitat Management (Instream Flows)

Goal: To protect sufficient instream flows to support self-sustaining populations of the fishes

- Status:
- o FWS flow recommendations developed for Colorado, Yampa, and Green Rivers
 - o 10,000 AF being provided from Ruedi Reservoir (long-term)
 - o Short-term agreements to provide additional water from Ruedi and Steamboat Reservoirs
 - o Draft biological opinion issued on Flaming Gorge Reservoir in February 1992
 - o FWS has requested a change in Aspinall unit reservoir operations (Gunnison River)
 - o The Colorado Water Conservation Board moving forward with appropriating 581 cfs instream flow in the 15-Mile Reach
 - o Active efforts to acquire water rights on the Yampa River (see attached FY 94 Initiative)
 - Juniper-Cross Mountain Rights
 - Cross Mountain Ranch

Issue: The legal, policy, and institutional issues related to instream flow acquisition and protection in Colorado are being reviewed in 1992. Also, an independent scientist will review the Service's flow recommendations and methods.

D. Habitat Development and Maintenance

Goal: To provide or enhance habitat for the rare fishes through habitat development or management measures such as:

- o fish passageways
- o backwater habitat development

Status:

- o Actively pursuing restoring fish passage to the Gunnison River and upper mainstem Colorado River near Grand Junction, Colorado (see attached FY 94 Initiative)
- o Restoring access to flooded bottomlands on Green River (demonstration project)
- o Increased emphasis in FY 93 on acquisition, restoration, and management of flooded bottomlands throughout the basin. (See attached FY 94 Initiative)

E. Stocking Native Fishes

Goal:

- A. Produce a sufficient supply of hatchery reared fish to support research and recovery activities
- B. Conserve the genetic diversity present in the wild

Status:

- o Genetic surveys underway
- o Refuge/brood stock populations being established
- o Colorado conducting hatchery feasibility study
- o The Service's hatchery/research facility at Ouray, Utah, being expanded
- o Refuge ponds developed at Horsethief State Wildlife Area, Grand Junction, Colorado

- o Imprinting and chemoreception study being conducted
- o Habitat suitability assessment in unoccupied reach of Colorado River

- Issues:
- o Current hatchery facilities inadequate to meet needs (see attached FY 94 Initiative)
 - o Role of hatchery propagation and stocking of native fish in recovery plans is unresolved

F. Research, Monitoring, and Data Management

Goal: Collect critical information on the life history and habitat needs of the endangered fishes to support recovery efforts.

- Status:
- o Determine habitat/flow needs of the fish
 - o Clarify confusion in the taxonomy of Gila (chubs)
 - o Long-term monitoring programs for:
 - fish populations
 - flow
 - habitat
 - channel change
 - o Interagency data management program
 - o Integrated research efforts to refine/validate flow recommendations related to Flaming Gorge and Aspinall

- Issues:
- o Measures to minimize impacts of sampling on fish populations being implemented

G. Nonnative Fishes and Sportfishing

Goal: Minimize the impacts of nonnative fishes and incidental take associated with sport fishing on the endangered fishes.

- Status:
- o Service reviewing state proposal to stock nonnatives
 - o Altering flow regimes to provide unfavorable conditions for nonnatives
 - o Information & Education efforts directed at anglers

H. Information and Education

Goal: To promote public understanding, appreciation, and support for efforts to recover the endangered fish.

- Status:
- o Biannual newsletter
 - o Information about the fish and Recovery Program
 - Brochure and poster
 - Signs and fishing regulations
 - Slide/tape show
 - Video
 - o Public attitude survey
 - o Media relations and press releases

I. Section 7 Consultation

Goal: To recover the fish while allowing water development to proceed in the Upper Colorado River Basin.

- Status:
- o "No jeopardy" biological opinions have been issued on 51 projects since the inception of the program in 1988, totalling 131,750 AF of water depletion
 - o Most of the projects involved "small" depletions (<3000 AF per year).
 - o The Service evaluates whether the Recovery Program has achieved "sufficient progress" to offset the impacts of large depletion projects (>3000 AF per year). Additional conservation measures beyond payment of a depletion charge will be required if "sufficient progress" has not been made.
 - o The draft biological opinion on the operation of Flaming Gorge Dam was issued in February 1992.
 - o The Service has requested a change in the operation of the Aspinall Unit beginning in 1992. A biological opinion is scheduled for 1998.

- Issues:
- o Disagreement over how to address historic projects (e.g., the Grand Valley diversion) in the Section 7 consultation process
 - o The "sufficient progress" requirement by the Service is being reviewed.

J. Other Items

- A. Razorback sucker listed; critical habitat being identified.
- B. A separate San Juan River Recovery Program to be developed by October 1992 as a result of Section 7 consultation on the Animas-LaPlata Project (research already in progress).

Mr. John Turner, Director
U.S. Fish and Wildlife Service
1849 C Street, NW
Washington, D.C. 20240

Dear Mr. Turner:

We are writing to bring to your attention some specific concerns we have about the Fish and Wildlife Service's process for allocating funds to our States pursuant to Section 6 of the Endangered Species Act. Currently, \$200,000 of the Service's funding commitment to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) is provided to the States of Utah and Colorado through Section 6 of the Endangered Species Act. However, as a result of an allocation formula initiated in 1988 by the Service's Washington office, Region 6's total Section 6 funds have been declining dramatically. For example, if the \$200,000 for the Recovery Program were to be taken from Region 6's Section 6 allocation, funds would be available for work on only 6 species by 1995. This would adversely affect the States' participation in endangered species recovery efforts, not only in Utah, Colorado and Wyoming, but also the other five states in Region 6 (Montana, North Dakota, South Dakota, Kansas, and Nebraska). We fully appreciate the need for the Service to have an objective process for allocating Section 6 funds, but believe that there needs to be flexibility in the process to account for major funding commitments like the Recovery Program.

In fiscal year (FY) 1992, the Service wisely decided to earmark \$200,000 of Section 6 funds to the Recovery Program before the allocation formula was applied. This ensured that Section 6 funding for the Recovery Program would be over and above Region 6's normal Section 6 allocation, and made those funds available for use on other high priority endangered species in Region 6.

In reviewing the Service's proposed FY 93 budget, we see no indication that the Service intends to continue this practice. If true, we respectfully request that the Service reconsider its position and implement the practice that was initiated in 1992 on a permanent basis.

We would appreciate your personal attention to this important matter and look forward to your favorable reply.

Sincerely,

Members of the Colorado, Utah, and
Wyoming Congressional Delegation

cc Senator Robert Byrd
Congressman Sidney Yates
member of the North Dakota, South Dakota,
Montana, Kansas, and Nebraska delegations

Major FY 94 Initiatives
Colorado River Recovery Program
April 1992

1. Restoration of fish passage to historical habitat on the Gunnison and Colorado rivers.

Discussion: Currently, fish access to about 100 miles of historically occupied habitat on the Gunnison and Colorado rivers is prevented by several low height diversion dams on the Colorado and Gunnison Rivers. By restoring passage to these areas, the range of Colorado squawfish and razorback sucker in the Colorado River subbasin could be increased by over 50 percent. The Redlands diversion on the Gunnison River is a complete barrier to fish migration at all but very high flows. A recently completed evaluation indicates the lower 50 miles of the Gunnison was historical habitat for the Colorado squawfish and the razorback sucker and provides high quality adult habitat and potential spawning habitat for both species. Likewise, the Price Stubs dam and the Roller dam on the Colorado River near Grand Junction currently prevents fish access to about 50 miles of historical habitat for razorbacks and Colorado squawfish.

Status: A design for an experimental fish ladder was completed by the Corp of Engineers for the Redlands dam on the Gunnison River in 1986. The merits of this design is being re-evaluated along with the option of buying out the Redlands power plant which would permit removal of the dam. Fish passage at the Roller dam and the Price Stubs dam on the Colorado River is being integrated into the planned rehabilitation of the Roller dam by the Bureau of Reclamation.

Preliminary Cost Estimate: Redlands - \$1.5 million (fish ladder) to \$18 million (removal of the Redlands)
Prices Stubs and Roller Dam - unknown

2. Yampa River instream flow protection and water development

Discussion: The Yampa River is considered the best remaining habitat for the endangered fishes in the upper basin. A comprehensive package is being developed to (a) provide for substantial protection of instream flows on the Yampa River, and (b) meet the long- and short-term water needs of the Yampa River Basin. Major elements of the package include:

- a. acquisition of a major portion of the Juniper and Cross Mountain water rights and dedication of these rights to instream flows for the endangered fish. These rights account for about 62 per cent of the water that remains available for development on the Yampa River.
- b. enlargement of Elkhead Reservoir near Craig, Colorado to meet recreational and water needs in the basin.
- c. reservation of sufficient water rights to meet the long term water demands in the basin

- d. rehabilitation of agricultural diversions structures on the Yampa River to allow for fish and recreational boating passage.
- e. evaluation and implementation of water conservation opportunities in the Yampa basin.

Status: a study to identify reservoir sites compatible with the needs of the endangered fishes and meet the water needs of the basin will be completed in August 1992. A two year feasibility level study for expansion of the Elkhead site will be initiated in 1993.

Preliminary Cost Estimate: \$25 million (reservoir enlargement, rehabilitation of river diversions)

3. Identification, acquisition, restoration and/or management of flooded bottomlands for endangered fishes.

Discussion: Historically, floodplains throughout the Upper Colorado River Basin were inundated each year by spring runoff, but today much of the river is channelized by levees, dikes, rip-rap, and the invasion of the exotic plant--tamarisk. Numerous studies have documented the importance of flooding to the overall health of the river ecosystem, and their associated fish community. Inundated floodplains provide food, space, and cover; feeding, resting and nursery areas; nutrients and increased productivity; warm, calm water; and refuge from competitors and predators. Restoration of flooded bottomlands is thought to be especially important for the endangered razorback sucker and will provide numerous benefits for waterfowl, and other wetland dependant wildlife.

Status: FY 93 plans involve (a) identifying the location and ownership of existing and historical flooded bottomlands in the Colorado, Gunnison, Yampa, White and Green rivers, (b) determining which of those areas are potentially important to recovery of the fishes, and (c) providing recommendations for acquisition, restoration and/or management of these lands.

Preliminary Cost Estimate: unknown

4. Endangered Fish Hatchery and Research Facility

Background: Additional hatchery and research facilities are needed in the upper basin to prevent extinction of endangered fish, protect against the loss of unique genetic resources, produce fish for stocking/reintroduction efforts, and provide for laboratory for research on the endangered fishes. Facilities that have been available to the Recovery Program at Dexter National Fish Hatchery, New Mexico are over taxed and inadequate to meet current and anticipated needs. Limited new facilities are being developed at the Ouray National Wildlife Refuge (Utah) and the Horsethief Canyon State Wildlife Area (Colorado) using Drought Relief Funds provided through the Bureau of Reclamation in FY 91. Colorado's Bellevue research hatchery is also contributing to the study of endangered fish propagation. However these will be inadequate to meet anticipated short- and long-term needs.

Status: The State of Colorado, in cooperation with the Service, and the Recovery Program will complete a feasibility level study to identify sites and design a hatchery/research facility in August 1992.

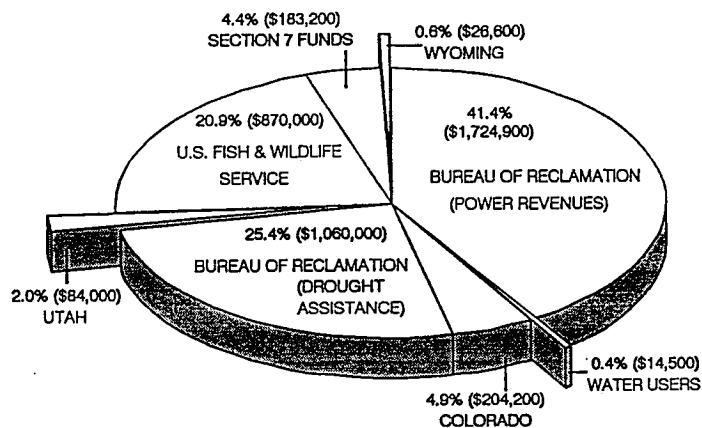
Preliminary Cost Estimate: \$5 - \$10 million for construction; with \$300,000 for annual operation and maintenance.

BUDGET

RECOVERY PROGRAM FOR ENDANGERED FISH OF THE UPPER COLORADO RIVER BASIN

Where the money comes from:

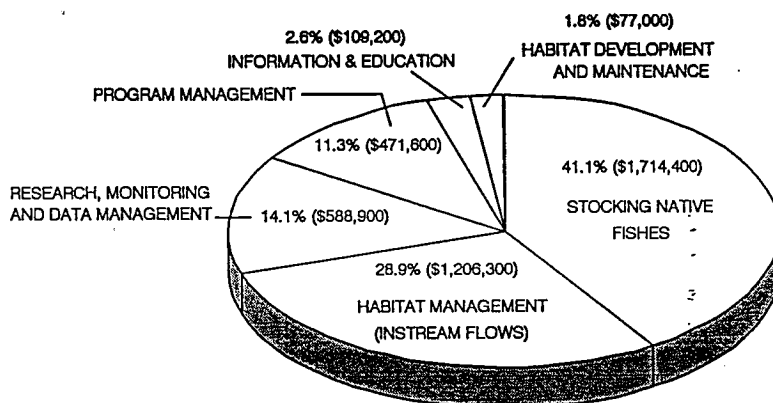
FUNDING SOURCES FOR FISCAL YEAR 1992 OPERATING BUDGET



TOTAL: \$4,167,400

Where the money goes:

FUNDING TARGETS FOR FISCAL YEAR 1992 OPERATING BUDGET

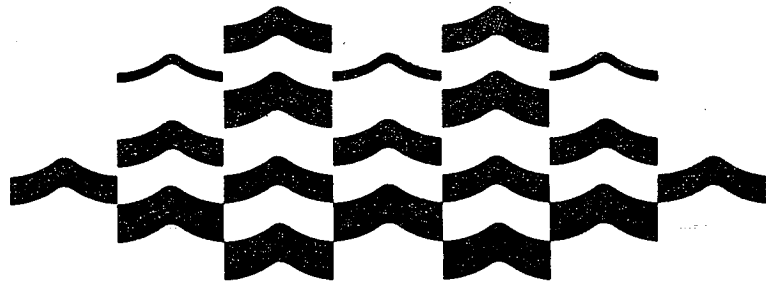


News Release

MAR 10 92

Upper Colorado Region

Salt Lake City, Utah
Barry D. Wirth (801) 524-5403
For Release February 26, 1992



RECLAMATION RECEIVES DRAFT BIOLOGICAL OPINION FOR OPERATION OF FLAMING GORGE DAM FROM U.S. FISH AND WILDLIFE SERVICE

A draft biological opinion which contains a reasonable and prudent alternative for the operation of Flaming Gorge Dam has been received by the Bureau of Reclamation (Reclamation). The Fish and Wildlife Service (Service) issued the draft opinion under the authority of Section 7 of the Endangered Species Act.

Reclamation and the Western Area Power Administration (Western), a party to the consultation, have worked with the Service in the development of the alternative. The Service believes, based upon the best scientific and commercial information currently available, that implementation of all the following elements will avoid the likelihood of jeopardizing the continued existence of the endangered Colorado squawfish, humpback chub, bonytail chub, and razorback sucker.

1. Reclamation agreed to modify the operation of Flaming Gorge Dam so that flow and temperature regimes of the Green River will more closely resemble natural conditions.

During the spring, releases from Flaming Gorge Dam will be patterned after spring flows of the Yampa River. Flaming Gorge releases will be gradually increased each year between April 1 and May 15 so that they will coincide with the peak run-off from the Yampa River to produce conditions at Jensen, Utah, thought to benefit the endangered fishes.

Summer and fall flows on the Green River will decrease to between 1,100 and 1,800 cfs at Jensen, Utah. Releases from Flaming Gorge beginning July 1 and continuing until November 1 will be of the warmest water available using the selective temperature withdrawal structure.

Winter flows, occurring after November 1, will be stabilized, if possible, once ice cover forms and remain through normal spring breakup. However, this period of time will primarily be used to manage Flaming Gorge storage to ensure that flows needed for the spring peak and summer low period will be available.

2. Under the direction of the Recovery Program, a 5-year research program will be initiated. It will include implementation of winter and spring research flows, beginning in the spring of 1992. The research program will attempt to refine flow recommendations during these time periods. Annual meetings will be held to refine seasonal flows based on research findings and forecasted reservoir inflow.

3. Reclamation will complete studies, during the 5-year research program, to determine the feasibility of providing warmer water during critical life history periods of the endangered fish. Reclamation will also investigate the feasibility of retrofitting river bypass tubes to include power generation that would result in higher spring releases.

4. A critical element of the reasonable and prudent alternative will be to develop a legal mechanism to ensure that the releases from Flaming Gorge Dam are delivered to and available for use by the endangered fishes in an area from Swallow Canyon near Browns Park National Wildlife Refuge, to Lake Powell.

Additionally, the re-operation of Flaming Gorge Dam will offset depletion impacts for some features of the Central Utah Project.

5. At the end of the 5-year research program, discussions between the Service, Reclamation, and Western will be held to determine if further refinement of the winter and spring releases is needed.

In early 1980, the Service requested Section 7 consultation on the operation of all existing Reclamation projects in the Upper Colorado River Basin. Initiation of consultation on Flaming Gorge Dam was formalized in March 1980. In August 1991, Western became party to the consultation with Reclamation remaining the lead agency.

During the late 1970's and early 1980's, jeopardy opinions were issued for the Upalco, Jensen, and Uintah Units and Strawberry Aqueduct and Collection System, all units of the Central Utah Project. The reasonable and prudent alternative for each of these jeopardy opinions was the operation of Flaming Gorge Dam to provide flows required for endangered fishes.

In January 1988, the Secretary of the Interior (on behalf of the Service and Reclamation), the Administrator of Western Area Power Administration, and the governors of Colorado, Utah, and Wyoming formally endorsed the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin. The Recovery Program is aimed at recovering four species of fish--the Colorado squawfish, razorback sucker, humpback chub, and bonytail chub--while allowing water development to proceed.

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Fact Sheet

Recovery Program for Endangered Fish of the Upper Colorado River Basin

Budget

Over the Recovery Program's projected 15-year term, the budget is expected to total about \$60 million. The money is to come from the following sources:

- An operating budget of at least \$2.5 million (\$3.9 million for Fiscal Year 1992) is contributed by the U.S. Bureau of Reclamation; the U.S. Fish and Wildlife Service; the States of Colorado, Utah, and Wyoming; and water development groups.
- A Congressional appropriation of at least \$15 million will be requested: a minimum of \$10 million to acquire water rights and maintain adequate instream flows for the fish and \$5 million for capital construction projects.
- Water development depletion fees may provide up to \$10 million over 15 years.

Program Elements

Habitat management: Recovery Program funds will be used to identify and acquire adequate instream flows for the fish in accordance with State water laws and inter-State compacts. Funds also will go toward refining operation of Federal dams to meet the instream flow needs of the fish.

Habitat development: Researchers will make recommendations on creating, protecting, and improving habitat for the fish. Projects may include creating spawning and nursery habitat, developing grow-out ponds and constructing fish passageways.

Stocking native fish: Researchers are developing ways to identify and maintain genetic stocks of native fish, studying the survival of hatchery fish in the wild and evaluating the feasibility of constructing a hatchery to raise and provide protective "refugia" and broodstock for endangered fish. They are also refining techniques for raising Colorado squawfish in hatcheries and are spawning wild razorback suckers to be reintroduced to the wild and/or use in research studies.

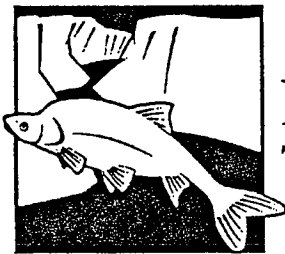
Nonnative species and sportfishing: Biologists are monitoring sizes of native and nonnative fish populations and are studying competition between the two. Stocking of nonnative fish has been limited to areas where there appears to be no conflict with the four rare native fish. Information is being distributed to the public to reduce accidental taking of the fish by anglers.

Research, monitoring, and data management: Biologists are conducting a variety of studies to determine the best means of recovering the fish. The research involves monitoring long-term populations trends, making recommendations on river flows, evaluating genetic differences between fish populations from different rivers, evaluating behavioral differences in hatchery and wild fish. Data from all studies are being compiled in a centralized computer data base.

Participants

U.S. Fish and Wildlife Service
U.S. Bureau of Reclamation
Western Area Power Administration
State of Colorado
State of Utah
State of Wyoming
Colorado Water Congress

Utah Water Users Association
Wyoming Water Development Association
National Audubon Society
Environmental Defense Fund
Colorado Wildlife Federation
Wyoming Wildlife Federation
Colorado River Energy Distributors Association



RECOVERY PROGRAM FOR THE ENDANGERED FISHES OF THE UPPER COLORADO

c/o Colorado Division of Wildlife • 6060 Broadway • Denver, CO 80216 • (303) 291-7468

Questions commonly asked about the endangered fish of the upper Colorado River

1. Why should anyone care about saving endangered fish?

The reasons for saving these fish range from environmental and recreational to legal.

Environmental reasons

The decline of the Colorado squawfish, humpback chub, bonytail chub and razorback sucker indicates the natural river environment has been drastically changed. The decline of these fish in the Colorado River system mirrors an increasing trend in the extinction rates of native fish in North America. According to an American Fisheries Society bulletin, human impact has caused 40 species and subspecies of fish in North America to become extinct this century; 19 of these have disappeared since 1964. Conservation organizations estimate that every day, at least one species in the world becomes extinct. And the U.S. Fish and Wildlife Service lists more than 350 animals and more than 230 plants as endangered or threatened in the United States; there are another 3,700 plant and animal species being studied for possible listing.

Like the coal miner's canary, whose death forewarns workers of toxic gases underground, the decline of the native fish is an early warning system for the river habitat. If the "weakest link" in this ecosystem can be saved, the environment may be preserved as well.

Sport-fishing

Saving the fish may also provide recreational benefits through trophy sport-fishing. Colorado squawfish, North America's largest minnow, once grew to more than 6 feet long and reached weights of up to 80 pounds. The Colorado River's top predator until the early 1900s, Colorado squawfish have been known to eat mice, birds, even prairie dogs. Also, this fish was called "white salmon" and "Colorado salmon" by early settlers, who valued it as a food and sport fish. If the fish can be recovered, tomorrow's anglers may gain the opportunity to reel in squawfish weighing 15 to 20 pounds.

Ecosystem balance, scientific benefits

Scientific research has shown that each species in an ecosystem has a unique purpose. Losing one species can cause a chain reaction affecting a series of other species. The loss of a species also means the loss of its unique genetic material and any medical, industrial and agricultural benefits that might have been discovered.

Heritage

These four fish are part of the heritage of the West and are found nowhere else in the world. In fact, the Colorado squawfish and razorback sucker evolved more than 3 million years ago. Modern man has existed only about 100,000 to 250,000 years.

Legal basis

The endangered fish are also protected by state and federal laws. The federal Endangered Species Act of 1973 states that endangered and threatened species of fish, wildlife and plants "are of esthetic, ecological, educational, historical, recreational and scientific value to the nation and its people." In passing this act, Congress was reflecting the belief that endangered species should be saved wherever possible.

Philosophical reasons

As Aldo Leopold, one of the founders of the conservation movement, said, "...Quit thinking about decent land-use as solely an economic problem...The last word in ignorance is the man who says of an animal or plant: 'What good is it?' If the land mechanism as a whole is good, then every part is good, whether we understand it or not...To keep every cog and wheel is the first precaution of intelligent tinkering..." (From "A Sand County Almanac" and "Round River.")

2. Why are these fish endangered?

The fish are endangered because of human impact on their habitat over the past 100 years. The two types of habitat alterations that probably have had the greatest impact have been water development and introductions of non-native fish.

Water development

Human population growth since the turn of the century created a significant demand for water and hydroelectric power in western states. To meet that demand, hundreds of water projects, including dams, canals and irrigation projects, have been constructed on the Colorado River and its tributaries. Most of these projects were constructed prior to the Endangered Species Act of 1973. This law requires each federal agency to review its activities and proposed projects to determine the impact on endangered species. Water projects have restricted the fish to about 25 percent of their former range and have blocked some of the spawning migration routes of the Colorado squawfish and other species.

The remaining habitat has been changed considerably. For example, many of the rivers' "backwaters" have disappeared. To survive and grow, young native fish need the protection of backwaters, which have warmer water and are separated from the river's main channel. Also, tailwaters six to 20 miles downstream from dams can be as much as 15 degrees colder than the rare fishes' preferred habitat. And in the lower Colorado River Basin, below Lake Powell, water development has transformed the once free-flowing, silty and warm waters of the Colorado River into a series of lakes connected by cold, clear waters downstream of dams. The native fish have been unable to adapt to these habitat changes.

Non-native fish

Introductions of non-native fish into rivers, lakes and reservoirs also have taken a toll on the native fish. Construction of dams led to increased public demand for fishing in lakes and reservoirs. To increase fishing opportunities, private citizens and state and federal wildlife agencies began stocking non-native fish in the Colorado River in the late 1800s. These non-natives compete with native fish for food and space, probably with more success.

Historically, there were only 14 fish species in the upper Colorado River Basin. But now the four endangered fish have to compete with an additional 41 non-native species. Also, some of the non-natives are efficient predators that prey on the eggs and young of endangered fish.

Other factors

Some native fish have been killed intentionally. Some local residents may prefer to catch northern pike, channel catfish and other non-native sport fish they may consider more desirable. When they hook a native fish, they may simply toss it on the riverbank to die.

And in the mid-1960s, the chemical rotenone was used to reduce native fish populations and make way for non-native sport fish in portions of the upper Green and San Juan rivers before the closure of dams at Flaming Gorge and Navajo reservoirs. Follow-up studies found the total number of fish had dropped, but the ratios of various species remained about the same. Researchers concluded there was no lasting effect on the native fish species. Since then, the public has come to appreciate wildlife for more than consumption, and public policy now reflects that attitude shift.

Other factors that may have contributed to the fishes' decline include pollution and parasites. Among the chubs, hybridization may also be a factor.

3. Which fish species are native to the upper Colorado River Basin?

Only 14 species of fish are native to the upper Colorado: the Colorado squawfish, humpback chub, bonytail chub, razorback sucker, Colorado River cutthroat trout, Rocky Mountain whitefish, roundtail chub, speckled dace, Kendall Warm Springs dace, flannelmouth sucker, mountain sucker, bluehead sucker, mottled sculpin and the paiute sculpin.

4. What is the Recovery Program for Endangered Fish?

The Recovery Implementation Program for Endangered Fish Species of the Upper Colorado River Basin is a 15-year, multi-agency program aimed at re-establishing self-sustaining populations of Colorado squawfish, humpback chub, bonytail chub and razorback sucker by the year 2003. The program became official in January 1988, with the signing of an agreement by the governors of Colorado, Utah and Wyoming, the secretary of the Department of the Interior and the administrator of the Western Area Power Administration.

The purpose of the Recovery Program is to recover these four rare fish while allowing water development to proceed. The program complies with all applicable laws, including the Endangered Species Act, state water laws, river laws and interstate water compacts.

The following organizations and agencies are represented on this program: U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Western Area Power Administration, State of Colorado, State of Utah, State of Wyoming, National Audubon Society, Environmental Defense Fund, Colorado Wildlife Federation, Wyoming Wildlife Federation, Colorado Water Congress, Utah Water Users Association and Wyoming Water Development Association.

5. Why are the fish considered "endangered" if they can easily be raised in hatcheries?

Hatchery-raised endangered fish are an important part — but not all — of the solution. The purpose of the Endangered Species Act is to conserve not only rare species of animals and plants, but also the ecosystem on which they depend. Recovery goals call for "self-sustaining" populations of fish; having to stock hatchery fish on an ongoing basis would not reach these goals or achieve the purpose of the Endangered Species Act. Currently, the role of hatchery fish also is limited for the following reasons:

- Some biologists believe that Colorado squawfish become "imprinted" to a specific spawning site at an early age and will spawn in that site only. Unless properly imprinted, hatchery-raised squawfish may not know where to go to spawn in the wild.
- Existing populations of hatchery-raised endangered fish have been bred from a very limited number of adult fish. The lack of variation in their "genetic makeup" may reduce their ability to survive in the wild. Also, the stocked fish could harm wild fish populations by competing with them for food or by introducing new fish diseases and parasites.
- In-stream flows must be maintained, and suitable habitat, such as protected backwaters for young fish, must be available to support the fish's various stages of life. Without improving the river habitat, it is unlikely that many of the fish that were stocked would survive and successfully reproduce.

6. How will hatchery fish be used in recovery?

The use of hatchery-raised endangered fish is an important tool in the Recovery Program. Hatchery fish can be used in studies that will aid the fishes' recovery. Hatchery facilities can be used to maintain captive or "refuge" populations of wild fish to prevent such populations from going extinct in the event of an oil spill or other natural disaster. To help establish self-sustaining populations, hatchery-raised fish can be stocked in stretches of river where fish populations have severely dwindled or disappeared.

Researchers are developing methods for "artificially imprinting" hatchery fish to spawning areas in the natural river environment. Also, biologists have captured small "brood stocks" of razorback suckers and Colorado squawfish from the wild. These fish will be held in protective ponds or hatcheries for breeding. The Colorado Water Conservation Board is overseeing a study to determine the feasibility of constructing a hatchery for all four rare fish. Biologists are working to improve techniques for raising endangered fish in hatcheries. Other studies will determine whether fish from one river are genetically different from those in another. Researchers hope that by applying the findings from these studies, they will improve the chances for hatchery-raised endangered fish to survive and reproduce in the wild.

7. Why is there so much concern about Colorado squawfish when other squawfish are abundant in California and the Northwest?

The answer is simple: Just as the golden eagle and bald eagle are different species, the squawfish found in California and the Northwest are distinct species from the Colorado squawfish. Each fish species evolved in a different river system and now has different characteristics and different responses to environmental changes.

None of the other species — the northern squawfish (also called the Columbia River squawfish), Sacramento squawfish and Umpqua squawfish — has been known to grow to the size of the Colorado squawfish, which historically reached lengths of 6 feet. Also, the other species populations are doing well despite habitat alterations from the construction of dams and introductions of non-native fish species. The northern squawfish originally evolved in lakes and appears to adapt easily to man-made reservoirs. In fact, unlike the Colorado squawfish, the northern squawfish prey effectively on game fish and often become the dominant species in reservoirs, despite biologists' efforts to limit their population size.

8. What work was done with these fish prior to the Recovery Program?

Researchers from various universities and state and federal agencies began gathering information on these fish in the 1960s. But these initial projects were conducted independently of one another. The first attempt to coordinate research projects throughout the Colorado River Basin began in 1979 with the U.S. Fish and Wildlife Service's Colorado River Fisheries Project with funding from the U.S. Bureau of Reclamation.

These early research efforts provided background information that has been used to direct current research projects. Since 1988, all research projects in the upper Colorado River Basin have been coordinated by the Recovery Program. Also, funds from the program also are now being used to acquire in-stream flows for the fish, inform the public about endangered fish and improve methods for raising endangered fish to be stocked in the wild.

9. Why does the research take so long?

Steep canyon walls make much of the river system difficult to access. And there are only limited numbers of fish available to study and more than 1,000 miles of turbid river to cover. As a result, research projects can be quite costly and take several years to complete.

10. Which rivers are included in the Recovery Program?

The program is directed at the upper Colorado River Basin, which is upstream of Lake Powell in Colorado, Utah and Wyoming. Major rivers included are the Colorado, Gunnison, Dolores, White, Yampa, Little Snake, Green, Duschene, Price and San Rafael. The San Juan River Basin and rivers in the Lower Colorado River Basin are not included.

11. How has the Recovery Program affected sport-fishing in the upper Colorado River and its tributaries?

The introduction of non-native fish such as channel catfish, northern pike, large and smallmouth bass, green sunfish, black crappie and white crappie has been significantly reduced in the upper Colorado because of possible competition with and predation on the native fish.

But rainbow, brown and cutthroat trout are still stocked in higher elevations of the upper Colorado River and its tributaries. Trout are cold-water fish that prefer temperatures 10 to 15 degrees cooler than those in the lower (downstream) sections of the river where endangered fish are found. Because they tend to live in different parts of the river, trout and the endangered fish are not considered competitors.

Stocking of non-native fish species will be confined to areas where there is no potential conflict with rare or endangered fish. In Colorado, non-native sport fish are no longer stocked in the upper Colorado River Basin unless a consultation with the U.S. Fish and Wildlife Service determines the non-natives will not harm the native fish. A similar agreement is currently being developed with Utah.

12. How will water development in the upper Colorado River Basin be affected by this program?

The purpose of the Recovery Program is recover the fish while allowing water development to proceed in the upper Colorado River Basin. The Recovery Program provides an agreed-upon process for conducting consultations on new water projects in accordance with Section 7 of the Endangered Species Act. According to Section 7, federal agencies shall not take any action that is likely to jeopardize the continued existence of threaten and endangered species.

Under the Recovery Program, the impacts caused by new water depletions or reductions in river flows will be offset by a one-time contribution of \$10 per acre-foot of a project's average annual net depletion. (This figure is adjusted annually for inflation; for fiscal year 1991, it is \$10.91.) The U.S. Fish and Wildlife Service implements this on a case-by-case basis depending on whether progress in implementing the Recovery Program, especially acquiring and protecting in-stream flows under state law, has been sufficient to offset depletion impacts of a proposed project. Since 1988, this process has been used successfully on more than 30 water projects in Colorado, Wyoming and Utah. As a result, more than \$40,000 has been generated to fund recovery activities for the fish.

The Recovery Program contains no specific provisions for offsetting direct (non-depletion) impacts of water projects constructed in habitat occupied by endangered fish. This includes impacts caused by habitat alteration, construction, blockage of migration routes, converting occupied river habitat into a reservoir and temperature modifications caused by reservoir releases. Whenever possible, the Fish and Wildlife Service will suggest "reasonable and prudent alternatives" to offset these types of direct project impacts. But water projects that would cause direct impacts to certain reaches of the Green, Colorado, White and Yampa rivers identified in the Recovery Program as "extremely important to the protection and recovery of the fish" would likely result in a situation for which no reasonable or prudent alternatives exist.

13. How will you know when the fish are recovered?

The Recovery Program calls for "self-sustaining" populations of fish and natural habitat to support them. Members of the Recovery Program are developing quantified goals for each species. Because the bonytail chub is so rare, the immediate goal for this fish species is to prevent extinction.

List of Contacts

Recovery Program Washington D.C. Briefings
March 31 - April 3, 1992

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Congressional Committees

Staff of Interior and Related Agencies Appropriations Committee

Staff of Fisheries and Wildlife Conservation and the Environment
Subcommittee

Staff of Committee on Merchant Marine and Fisheries

Senate Committees

Staff of Interior and Related Agencies Subcommittee

Staff of Committee on Energy and Natural Resources

Staff of Subcommittee on Environmental Protection

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