

swimming upstream

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

Access to historic river habitat restored

Endangered fish are regaining access to important historic river habitat in the upper Colorado and San Juan rivers by the construction of fish passages at low-level diversion dams. The Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program have already provided fish passage at several diversion dams that were put in place during the early- and mid-1900s to provide water for irrigation and hydro-power in growing western communities. The recovery programs are working to modify the remaining barriers.

Good news for endangered fishes

Reopening river corridors is particularly good news for adult Colorado pikeminnows and razorback suckers. These big-river fishes require a variety of habitats in different river regions to complete their life cycle. Colorado pikeminnow are known to migrate as far as 295 miles to and from spawning sites in spring and summer and to reach calmer water



NAVAJO NATION DEPARTMENT OF FISH AND WILDLIFE TECHNICIAN ALBERT LAPAHIE HOLDS A RAZORBACK SUCKER THAT USED THE FISH PASSAGE AT THE PUBLIC SERVICE COMPANY OF NEW MEXICO WEIR ON THE SAN JUAN RIVER IN 2007. THE NAVAJO NATION OPERATES THE FISH PASSAGE FOR THE SAN JUAN RIVER RECOVERY PROGRAM.

in pools and eddies during winter. In fact, early settlers sometimes referred to Colorado pikeminnow as “white

salmon” because of their migratory behavior and appearance.

Historically, the Colorado and San Juan River basins were a continuous series of habitats, and the only physical barriers to fish movement were natural rapids and swift, turbulent

flows, which were likely only seasonal barriers to fish movement.

Since 1905, numerous low-level diversion structures constructed throughout the Colorado and San Juan river basins fragmented the fishes’ habitat and blocked their migration

corridors. In addition, fish may enter and became trapped in irrigation canal systems built to divert water.

Fish passages are important during times of drought because they allow endangered and other fish to migrate to pools of water above diversion dams where water is more plentiful. The recovery programs have installed fish screens in diversion canals to keep juvenile and adult fish from entering and becoming trapped. The screens may also benefit water users by preventing debris from entering the canals.

Cooperative efforts improve fish habitat

The recovery programs work cooperatively with American Indian Tribes, water and power customers, and local landowners to improve fish habitat at privately-owned facilities. The Bureau of Reclamation acts on behalf of the recovery programs to oversee all aspects of fish passage and screen construction.

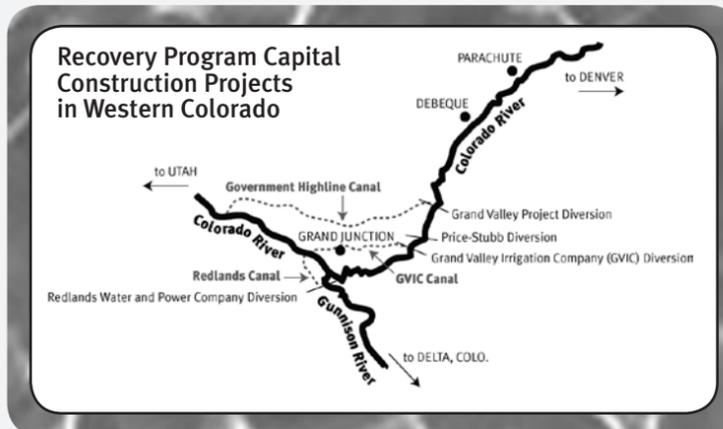
Completion of the fish passages and screens in the Upper Colorado River and San Juan River basins to reopen river corridors requires extensive cooperation from multiple sources.

“Completion of these capital projects over the past decade would not have been possible without the cooperation of local, state and federal agencies and Indian tribes,” said Upper Colorado River Recovery Program Director Bob Muth. “The parties involved worked together to develop the most cost-effective and efficient solutions to allow fish passage and prevent fish from becoming trapped in irrigation canals. Privately owned companies also granted access to their facilities and continue to operate and maintain them.”

—continued on page 4



COMPLETION OF A FISH PASSAGE AT THE PRICE-STUBB DIVERSION DAM ON THE COLORADO RIVER IN SPRING 2008 WILL GIVE ENDANGERED FISH ACCESS TO 52 MILES OF CRITICAL HABITAT THAT HAS BEEN BLOCKED SINCE 1911.



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Colorado pikeminnows and razorback suckers to benefit from challenge grant.

Expansion of nonnative fish removal and endangered fish augmentation efforts used as management tools on the San Juan River

—by Jason Davis, Fish Biologist,
U.S. Fish and Wildlife Service

The introduction and establishment of nonnative fishes has been identified as a major threat, via competition or predation, to the continued existence of native fishes in the Colorado River Basin including the San Juan River. Management of these invasive species is one activity that the San Juan River Basin Recovery Implementation Program (Recovery Program) agrees will aid in recovery efforts for endangered Colorado pikeminnows and razorback suckers. For the past seven years, nonnative fishes — primarily channel catfish and common carp — have been intensively removed from various sections of the San Juan River.

Removal efforts have focused on the upper and lower-most extents of these nonnative fishes' range in the San Juan River. Although some success has been seen, including reduction in size class of channel catfish and significant reduction in common carp abundance, only limited removal efforts have taken place between intensive removal reaches. Results from annual monitoring efforts suggest channel catfish abundance has dramatically increased in the section of river that lies between intensive removal reaches. Based on these data, the Recovery Program has adopted a nonnative fish removal strategy that includes intensive removal throughout 95 miles of river that until now has been sampled only on a limited scale.

Beginning in the spring of 2008, the U.S. Fish and Wildlife Service (Service) will conduct eight raft-mounted electrofishing passes through this reach annually. These efforts will be made possible using a multi-agency approach with partners from New Mexico Department of Game and Fish, University of New Mexico, Bureau of Indian Affairs and the Navajo Nation. Nonnative removal trips in upper and lower



U.S. FISH AND WILDLIFE SERVICE FISH BIOLOGIST JASON DAVIS (LEFT) AND ERNEST TELLER, OF THE BUREAU OF INDIAN AFFAIRS, RELEASE COLORADO PIKEMINNOWS INTO "SOFT" RELEASE ENCLOSURES ON THE SAN JUAN RIVER.

reaches that have been sampled since 2001 will continue to ensure that progress within these reaches is not lost.

Raising and stocking endangered fish

Concurrent with an increased effort in nonnative fish removal is the rearing and population augmentation of Colorado pikeminnows and razorback suckers. Dexter National Fish Hatchery and Technology Center (Dexter) in New Mexico raises 300,000, 3-inch and 3,000, 7-inch Colorado pikeminnows to stock in the San Juan River annually.

Razorback suckers are raised at Uvalde National Fish Hatchery (Uvalde) in Texas and at a series of man-made ponds near Farmington, N.M. The Navajo Nation, in cooperation with the Service, is responsible for the management and harvest of razorback suckers at these ponds. In 2008, three ponds will

be stocked with fish provided by Dexter in the spring. These fish will be harvested and stocked in the fall after several months of growth in the ponds. Production from the ponds, coupled with fish from Uvalde, is expected to reach the goal of stocking 11,400, 10-inch fish annually.

Past stocking efforts, using traditional fish hauling and stocking techniques, suggest that immediate downstream dispersal of stocked Colorado pikeminnows is of concern. Based on this information, new release strategies are being developed in an attempt to improve downstream dispersal of stocked fish. When possible, fish will be stocked using a "soft" release strategy. This strategy consists of holding fish in low-velocity, off-channel habitats for 24 hours to seven days prior to release. The purpose behind this strategy is to allow stocked fish to acclimate to water chemistry and flow, and to allow the blood chem-

istry of the fish to return to normal levels post transport.

This soft release strategy was implemented in the spring of 2007 with 1,590, 7-inch Colorado pikeminnows. Although all data are preliminary, recapture data of these fish suggest that short-term retention was relatively high. Over three sampling trips post stocking, a total of 121 Colorado pikeminnows were recaptured, the majority of which were recaptured within six river miles of the release location. These trips were all conducted after elevated spring flows that had the potential to wash fish downstream. Continued data collection in 2008 will help managers determine the effectiveness of soft releases.

Efforts show success

Adult fish community monitoring shows that augmentation efforts show success in bolstering abundance and distribution of these rare fishes. A total of 323 Colorado pikeminnows, ranging from about five to 28 inches in length, were collected river-wide in 2006 and were the fifth most abundant fish collected during monitoring. In addition to Colorado pikeminnows, a total of 144 stocked razorback suckers, ranging from about five to 21 inches, were collected during monitoring. Preliminary data from 2007 efforts suggest similar levels in endangered fish abundance.

Nonnative fish management and endangered fish augmentation efforts are two examples of management activities being successfully implemented on the San Juan River. Each of these programs is subject to changes in protocol as new information becomes available. Researchers and managers expect that these two activities, working in concert, will contribute to progress toward recovery of Colorado pikeminnows and razorback suckers.

For more information, contact Jason Davis, (505) 342-9900 ext. 108, or jason_e_davis@fws.gov.

BONYTAIL

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U.S. FISH AND WILDLIFE SERVICE

RAZORBACK SUCKER

HUMPBACK CHUB

Research study launched to determine if humpback chubs can be raised in hatcheries

U.S. Fish and Wildlife Service (Service) and National Park Service biologists collected 400 young (less than four inches long) native fish of the *Gila* genus from the Yampa River in the Dinosaur National Monument in northwest Colorado in October. Most of these fish are probably roundtail chubs (*Gila robusta*), but some may be endangered humpback chubs (*G. cypha*).

The purpose of this research study is to document these fishes' survival during collection and transport from the river to hatcheries and to determine if they can be raised in hatcheries. The Upper Colorado River Endangered Fish Recovery Program (Recovery Program) will conduct the one-year study as part of efforts to recover the endangered humpback chub.

One of six known humpback chub populations is found in the Yampa and Green rivers in Dinosaur National Monument. Biologists recently reported that this historically small population may have declined, possibly due to prolonged dry weather and low river flow conditions and associated increases in nonnative fish.

The Recovery Program study is one of the first steps to determine future actions to manage this humpback chub population. The State of Colorado's J.W. Mumma Native Aquatic Restoration Facility in Alamosa, Colo., and the Service's Ouray National Fish Hatchery in Ouray, Utah, each received 200 of the collected fish.

"We give a lot of credit to our program partners who pulled out all the stops to collect these fish in a short period of time when river flows were just right," said Recovery Program

Propagation Coordinator Tom Czaplá. "We had staff from the Colorado Division of Wildlife, National Park Service and U.S. Fish and Wildlife Service working side-by-side to make this happen. We also appreciate the cooperation of Jim Carollo, the owner of Mantles Ranch, and his caretaker, Tom Seewald, who granted us access to his property. Tom also helped collect the fish."

The ease of capture of this large quantity of chubs indicates that they are prevalent in this particular section of the Yampa River within the monument. It will be about a year, however, before biologists are able to distinguish between young of the two *Gila* species to confirm which they represent. At that time, roundtail chubs will be returned to their original capture locations. The Recovery Program will evaluate the success of



U.S. FISH AND WILDLIFE SERVICE BIOLOGIST MARK FULLER (LEFT) AND COLORADO DIVISION OF WILDLIFE TECHNICIAN TOM MIX USE A SEINE (FISHING NET) TO COLLECT YOUNG FISH FROM THE YAMPA RIVER IN DINOSAUR NATIONAL MONUMENT.

this study and determine whether to continue to hold humpback chubs in hatcheries or return them to their original capture locations.

As standard practice, the state of Colorado and the Service take

every precaution to ensure no fish diseases or parasites are transferred between the rivers and the hatcheries. For more information, contact Tom Czaplá, 303-969-7322, ext. 228, or tom_czaplá@fws.gov.

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Yampa River community celebrates completion of Elkhead Dam and Reservoir enlargement

The Upper Colorado River Endangered Fish Recovery Program participated in enlargement of Elkhead Dam and Reservoir in northwest Colorado. The project was dedicated on July 11, 2007, as a model of local, state and federal cooperation to produce new water storage to benefit people and endangered fish in the Yampa River Valley.

The Recovery Program partnered with the Colorado River Water Conservation District and other state and local agencies on the 13,000 acre-foot, \$31 million project that almost doubled the size of the existing Elkhead Reservoir and brought the dam up to modern safety standards.

After two years of construction, the reservoir filled in spring 2007 to its new capacity of 24,778 acre-feet of water. An acre-foot of water is about 326,000 gallons, enough to supply two single-family homes for a year.

The need to protect endangered fish in the Yampa River was a driving force in the creation of a project that balances the needs of people and the environment. The project sets a precedent in that 5,000 acre-feet of the new water storage were dedicated to and financed by the Recovery Program, specifically to benefit the endangered Colorado pikeminnow and humpback chub in the Yampa River, seven miles downstream from the reservoir. Other water is set aside for future development in the Yampa Valley.



COLORADO RIVER WATER CONSERVATION DISTRICT BOARD PRESIDENT BILL TRAMPE (LEFT) WELCOMES COLORADO DEPARTMENT OF NATURAL RESOURCES EXECUTIVE DIRECTOR HARRIS SHERMAN AT THE DEDICATION OF THE ELKHEAD DAM AND RESERVOIR ENLARGEMENT.

Additionally, the Recovery Program can access up to another 2,000 acre-feet of water for the endangered fish under a long-term water lease. In summer 2007, the 5,000 acre-feet of permanent water was released into the Yampa River for the fish.

The enlargement initiated improvements of boat launching, day use and overnight camping facilities managed by Colorado State Parks.

"With the completion of the new dam, Elkhead has taken on a new persona," said Yampa River/Elkhead State Park Manager Ron Dellacroce. "The 'pond,' as it has been called in the past, is now bigger than many would have ever expected. Boaters and fishermen are excited about the recreation potential of the 'new' lake."

At the celebration, more than 200 people gathered for the dedi-

cation while children played at the water's edge and boats navigated the lake.

Dedication speakers included Harris Sherman, executive director of the Colorado Department of Natural Resources; Carol DeAngelis, Western Colorado area manager for the Bureau of Reclamation; Tom Iseman, water program manager for The Nature Conservancy of Colorado; Bill Trampe, Colorado River District board president; and Dan Birch, Colorado River District deputy general manager and project lead.

Each stressed the precedence of a project that meets the needs of endangered species, people, industry and recreation.

"This represents an important precedent for resolving current and future conflicts involving the Endangered

Species Act," Bill Trampe said. "Federal agencies have partnered with traditional water developers in a project resulting in water for the environment and water for the people in the Yampa Valley."

Harris Sherman shared Colorado Governor Bill Ritter's appreciation for the importance of the project and his best wishes for the dedication. "This represents a win-win situation for the community and a balance between the needs of people and species conservation. . . ." he said. "This is a model for what we ought to be doing in the other river basins in Colorado."

Carol DeAngelis spoke on behalf of the Recovery Program partners. "This helps maintain a river system with hundreds of miles of habitat considered vital to the recovery of the endangered fish. The enlargement will make water available to enhance



THE ELKHEAD RESERVOIR EXPANSION WILL INCREASE RECREATIONAL OPPORTUNITIES FOR PEOPLE OF ALL AGES, LIKE MORGAN CARTER, 2, AND HIS FAMILY, OF CRAIG, COLO.

flows in the Yampa River during mid-to-late summer," she said.

Tom Iseman hailed the collaboration behind the project. "It's not often that someone from the environmental community gets to celebrate the completion of a dam. . . . But we think the Elkhead Reservoir is a special project, and we celebrate its completion and believe it marks the beginning of a new era in water management in Colorado. Over the years, this [recovery] program has worked to create solutions to help recover endangered fish, without disturbing the flow of water to people," he said.

Dan Birch thanked the many "unsung heroes of the project," who worked long and hard under difficult conditions to complete the project on time including Ames Construction, MJ Miller Excavating, URS Engineering and their many employees. He also thanked local property owners for their support and provided special thanks to Colorado River District Engineer Ray Tenney who oversaw the project.

For more information about the Elkhead project, visit www.ColoradoRiverDistrict.org or contact Jim Pokrandt at 970-945-8522 ext. 236, or jpokrandt@crwcd.org. For more information about Yampa River/Elkhead State Park, visit <http://parks.state.co.us/parks/yampariver> or call 970-276-2061. ◀

Martinez named outstanding researcher of the year

Colorado Division of Wildlife Biologist Patrick (Pat) Martinez is the Upper Colorado River Endangered Fish Recovery Program's Outstanding Researcher of the Year. Pat has made numerous important contributions to endangered fish management in the Colorado River Basin during his 23-year career as a fishery biologist and researcher with the Colorado Division of Wildlife.



RESEARCHER OF THE YEAR PATRICK MARTINEZ

Pat's research led to the development and use of electrofishing standards that have improved efficiency in sampling fish populations. He and his colleagues also applied stable isotope analyses to promote understanding of riverine food webs and developed microchemical techniques allowing otoliths (fish ear bones) to be used to track movements of fish among various habitats.

"Perhaps some of Pat's most significant contributions to endangered fish recovery are his efforts to evaluate and minimize the interaction of introduced game fish," said Recovery Program Director Bob Muth. "One of the Recovery Program's goals is to manage nonnative sport fish populations where they conflict with recovery. Because of the popularity of these sport fish, that goal can be controversial. Pat excels in balancing the interests of the angling public with those of the Recovery Program by taking a scientific, questioning and cooperative approach."

Pat assumed a leadership role in developing Colorado's "Procedures for Stocking Nonnative Fish Species in the Upper Colorado River Basin," which laid the foundation for recovery of endangered fish as well as continued warmwater sportfishery management. He and his colleagues are continuing their work with fish otoliths to identify the sources of nonnative, predacious fish species in rivers of western Colorado and eastern Utah. This information will help determine the best management methods.

"Pat's ideas are always clear, innovative and forward thinking," said Kevin Bestgen, director of Colorado State University's Larval Fish Laboratory, who presented the award. "His career is defined by excellence. He is absolutely dedicated to the resource and works hard at implementing research findings. Pat is dedicated to performing the highest quality work that time, personnel, technology and scientific resources will permit."

In addition to research related to endangered fish, Pat has studied numerous other aquatic issues including lake trout ecology, kokanee and mysid shrimp interactions and coldwater reservoir ecology. He has published many peer-reviewed articles and never hesitates to share his research findings. In fact, he can often be found teaching biology students at Colorado State University in Fort Collins where he earned his undergraduate and graduate degrees in fishery biology.

While Pat appreciates the recognition he has received for his work, his greatest reward will be to see native fish populations reach a point at which they no longer require state and federal protection.

"Many threatened, endangered and native fishes have few vocal fans," Pat said. "No matter. Our agency missions, supported by state and federal laws, tell us that the greater public relies on us as fishery professionals to ensure the survival of our rare and low-profile fish species. This is noble work and a fight worth winning. I am grateful to my colleagues who strive to positively influence the recovery and preservation of these vulnerable animals." ◀

Editor's note: Pat is also the recipient of a Lifetime Achievement Award from the Colorado Division of Wildlife and the Award of Excellence from the Colorado/Wyoming chapter of the American Fisheries Society.

Biologist creates innovative educational programs

In the small southwestern town of Page, Ariz., 10 miles from the Utah state line and close to where the Colorado River flows into Lake Powell on its journey to the Grand Canyon, Utah Division of Wildlife Resources Biologist Quent Bradwisch created several innovative educational programs to teach people about four species of endangered Colorado River fish and efforts to recover them.

Quent, who raises bonytails at Utah's Wahweap State Fish Hatchery, worked with Page High School teachers and students to develop and implement a program where students raised hatchery-produced razorback suckers in a local golf course pond. The fish were later tagged and released into the San Juan River. Many of the students were members of the Navajo tribe. In addition to learning about endangered spe-

cies and the river ecosystem, students measured water quality at the National Park Service's Glen Canyon National Recreation Area. This science program provided a hands-on experience for students and teachers and resulted in news media publicity to raise awareness of recovery efforts.

Quent also improved the recovery programs' exhibit at water user conferences by bringing a small aquarium with young, hatchery-raised fish and sharing his expertise with conference participants.

Visitors to the Carl Hayden Visitor Center at Glen Canyon Dam enjoy watching endangered fish swim in a large aquarium that Quent helped establish. Visitor center staff report that this remains one of the center's most popular exhibits.

"Quent is an innovative thinker who recognizes that education is vital to the recovery programs' success," said Bob Muth, director of the Upper Colorado River Endangered Fish Recovery Program, who presented Quent with a special award to recognize his outstanding outreach efforts. "He uses his knowledge and skills as a biologist to develop education programs that appeal to different audiences and that support our recovery efforts."

Quent said, "The opportunity to interact with the general public at any level provides a great time to explain the recovery programs and provide correct, up-to-date information that will allow people to be better informed about these important issues." ◀



UTAH DIVISION OF WILDLIFE RESOURCES BIOLOGIST QUENT BRADWISCH SHOWS ALYSSA, 3, ENDANGERED FISH ON EXHIBIT AT THE CARL HAYDEN VISITOR CENTER.

Access to habitat restored continued from page 1

Projects nearly complete

Construction of a 900-foot-long, rock channel, non-selective* fish passage at the 8-foot high Price-Stubb Diversion Dam on the Colorado River in western Colorado began last fall. The passage is scheduled to open in April 2008. The Price-Stubb dam is the last remaining barrier to fish migration on the Colorado River from Utah's Lake Powell to the upper end of critical habitat near Rifle, Colo. Construction of the Price-Stubb fish passage will give endangered fish access to 52 miles of critical habitat that has been blocked since the dam was completed in 1911.

On the San Juan River, two fish passages are being planned to remove temporary barriers to fish movement. The Fruitland Diversion Dam and the Arizona Public Service Company weir are the last impediments to fish passage on the San Juan River. When passage is completed at these facilities over the new few years, endangered fish will have access to a total of 180 miles of critical habitat.

Relationships key to success

Through the years, the recovery programs have developed cooperative

relationships with private facilities to construct and operate these passages and screens.

"Redlands Water and Power has enjoyed an excellent working relationship with all agencies involved in the Upper Colorado River Recovery Program," said Superintendent Kevin Jones. "At first reluctant to accept the idea of a screen structure to be built in our power canal, we have since found it to be helpful in removing debris, regulating water flows and, of course, restricting endangered fish from entering our power plant and irrigation systems.

"With the recovery program's continued support and an excellent general contractor, the project has gone very smoothly with only minor bumps," Kevin added. "We operate the screen as much as possible to learn more about it and make any refinements that may be necessary."

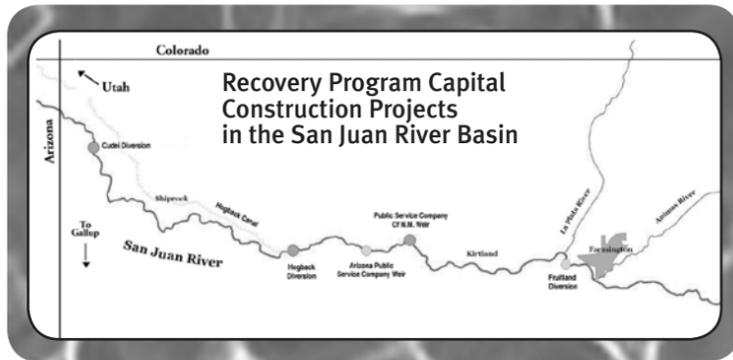
For more information on Colorado River facilities, contact Tom Czapl, 303-969-7322, ext. 228, or tom_czapla@fws.gov and on San Juan River facilities, contact Sharon Whitmore, 505-761-4753 or sharon_whitmore@fws.gov. ➔

Fish passages and screens currently in place

- Redlands Water and Power Company Diversion Dam on the Gunnison River in western Colorado**
 A 350-foot-long, U-shaped, selective** fish passage was completed in 1996. To date, 102 Colorado pikeminnows, 24 razorback suckers, one bonytail and 85,999 other native fish have used the passage. Colorado pikeminnow and razorback sucker reproduction has been documented in reaches upstream of the fish passage. A V-shaped fish screen became operational in 2005. The structure consists of 32, 10-foot by 10-foot panels and is designed to screen about 850 cubic-feet-per-second (cfs) of water. It includes bypass canals, trash racks with automated raking equipment and large-diameter buried pipes to return fish to the adjacent river system.
- Grand Valley Irrigation Company Diversion Dam on the Colorado River in western Colorado**
 A 300-foot-long, rock channel, non-selective* fish passage was completed in 1998. An Obermeyer gate was installed in 2007 to remotely open and close the passage. A fish screen with a 640 cfs capacity was installed in 2002. The screen consists of 23, 10-foot by 8-foot panels. It includes trash racks and a large diameter pipe to return fish to the adjacent Colorado River.
- Grand Valley Project Diversion Dam on the Colorado River in western Colorado**
 A 373-foot-long concrete, selective** fish passage was completed in 2005. During trial operations in 2005 and 2006, one razorback sucker, three humpback chubs, and about 14,000 other native fish moved upstream. The fish passage will operate full-time once a fish passage is completed at the downstream Price-Stubb Diversion Dam in spring 2008. A W-shaped fish screen became operational in 2006. The screen consists of 44, 12-foot by 12-foot panels and is designed to screen about 1,620 cfs of water. It includes trash racks with automated raking equipment and a large-diameter buried pipe to return fish to the adjacent Colorado River.
- Tusher Wash Diversion Canal on the Green River in eastern Utah:**
 Construction of a fish screen is scheduled to begin in late summer 2009 with completion slated for April 2010. Once this structure is completed, all major diversion canals identified in the recovery goals for the upper Colorado River system will be screened.
- Cudei Diversion Dam on the San Juan River in northwest New Mexico**
 The low-level diversion dam was removed in 2001.
- Hogback Diversion Dam on the San Juan River in northwest New Mexico**
 The diversion dam was modified in 2001 with a 500-foot-long, rock channel fish passage to provide non-selective* fish passage. Construction of a fish screen in the diversion canal is slated for completion in 2009.
- Public Service Company of New Mexico weir on the San Juan River in northwest New Mexico**
 Construction of a 400-foot-long, selective** fish passage was completed in 2003. Since then, 22 razorback suckers, 29 Colorado pikeminnows, and more than 87,000 other native fish have used this passage. A fish screen is not needed at this facility.

* Non-selective fish passage: All fish move through the passage.

** Selective fish passage: Fish are collected and sorted. Endangered and other native fishes are returned to the river upstream of the diversion dam. Nonnative fishes are either returned to the river downstream or transported to off-channel ponds for recreational fishing.



Recovery Program news and updates

swimming upstream



UTAH DIVISION OF WILDLIFE RESOURCES

Five-year review of recovery goals under way

The goal for recovery of the four endangered fishes is to achieve naturally self-sustaining populations and protect the habitat on which they depend. The U.S. Fish and Wildlife Service approved recovery goals in 2002 that provide objective, measurable criteria for downlisting to "threatened" and delisting (removal from Endangered Species Act protection). The Upper Colorado River and San Juan River recovery programs implement actions to achieve those goals.

The recovery goals are reviewed, and revised as needed, at least every five years. This first review is under way with completion slated for 2008.

For more information, contact Tom Czapl, 303-969-7322, ext. 228, tom_czapla@fws.gov. ➔



DAVE BUCHANAN, THE DAILY SENTINEL

Standardizing care and handling of endangered fish

All researchers go through extensive measures to ensure that endangered fish captured during monitoring efforts are cared for and handled properly and returned to the habitat where they were found. Endangered fish are placed into a boat's live-well when captured to allow the fish to come out of the shock. Salt, and sometimes air, is added to the live-well to help the fish recuperate. The water in the live-well is replaced often. All endangered fish are measured and PIT-tagged if a tag is not found.

This spring, the Upper Colorado River Recovery Program plans to implement standards for the care and handling of these fish.

For more information, contact Tom Czapl, 303-969-7322, ext. 228, tom_czapla@fws.gov. ➔



U.S. FISH AND WILDLIFE SERVICE

Uvalde doubles numbers of razorback sucker production

Uvalde National Fish Hatchery in south Texas is raising razorback suckers as part of a five-year project conducted in collaboration with Dexter National Fish Hatchery and Technology Center in New Mexico.

Each spring, Uvalde receives razorback suckers as fry from adults spawned at Dexter. The fish require about 18 months to reach the target size to be tagged and released. As of last fall, 7,057 tagged razorback suckers were released into the San Juan River. Successful efforts in 2006 and 2007 led to an increase in the number of razorback suckers grown from 6,000 to 12,000 fish per year. Netting protects the overwintering fish from migratory birds.

For more information, contact Dave Hampton, 830-278-2419, dave_hampton@fws.gov. ➔



San Juan Recovery Program website has new look

Visit the San Juan River Recovery Program's website at southwest.fws.gov/sjrip to see its new look.

The updated site includes the program's new logo. It also contains current information and numerous photographs that highlight the various projects taking place in the San Juan River Basin.

For more information, contact Joann Perea-Richmann, 505-761-4739, joann_perea-richmann@fws.gov. ➔



Swimming Upstream is a publication of the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program. These programs are national models of cost-effective, public and private partnerships. The programs are working to recover endangered fishes while water development continues in accordance with federal and state laws and interstate compacts, including fulfillment of federal trust responsibilities to American Indian tribes.

Debra B. Felker
Editor

UPPER COLORADO RIVER
ENDANGERED FISH RECOVERY PROGRAM
U.S. Fish and Wildlife Service
P.O. Box 25486, DFC • Lakewood, CO 80225
(303) 969-7322 • (303) 969-7327 – Fax
ColoradoRiverRecovery.fws.gov

Robert T. Muth
Program Director

Program Partners
Bureau of Reclamation
Colorado River Energy Distributors Association
Colorado Water Congress
National Park Service
The Nature Conservancy
State of Colorado
State of Utah
State of Wyoming
U.S. Fish and Wildlife Service
Utah Water Users Association
Western Area Power Administration
Western Resource Advocates
Wyoming Water Association

SAN JUAN RIVER BASIN
RECOVERY IMPLEMENTATION PROGRAM
2105 Osuna Road, NE • Albuquerque, NM 87113
(505) 761-4745 • (505) 346-2542 – Fax
southwest.fws.gov/sjrip

David L. Campbell
Program Director

Program Partners
Bureau of Indian Affairs
Bureau of Land Management
Bureau of Reclamation
Conservation Interests
Jicarilla Apache Nation
Navajo Nation
State of Colorado
State of New Mexico
Southern Ute Indian Tribe
Ute Mountain Ute Tribe
U.S. Fish and Wildlife Service
Water Development Interests



Program director's message

By Bob Muth, Director
Upper Colorado River Endangered Fish Recovery Program

The year 2008 marks the 20th anniversary of the Upper Colorado River Endangered Fish Recovery Program. This cooperative program was established in 1988 to recover the endangered humpback chub, bonytail, Colorado pikeminnow and razorback sucker while water development proceeds. Four years later, the San Juan River Basin Recovery Implementation Program was created to achieve similar goals — to recover endangered Colorado pikeminnow and razorback sucker in the San Juan River while water development continues. These programs demonstrate that endangered species conservation and water development and management can be compatible.

The programs use an adaptive-management approach to develop and implement management actions to achieve their goals. This approach enables the programs to continually evaluate and refine their efforts as new information becomes available and to adapt to changing factors.

Partners are key to their success. Program participants work together to make informed decisions that will achieve the programs' dual goals. This issue of *Swimming Upstream* highlights a few of the year's accomplishments. Each project was made possible with the cooperation and support of program partners.

The expansion of Elkhead Reservoir in northwest Colorado, completion of habitat improvements at privately owned, low-level diversion structures, management of nonnative fishes and implementation of many other projects are all a result of the partners' dedication and commitment to the success of these programs.

Hundreds of individuals work hard every day to carry forward the work of the programs. Staff and volunteers conduct research, manage hatcheries and implement stocking operations, track data, pay the bills, balance the budgets, provide education, monitor fish populations, oversee capital construction projects and much, much more.

Relationships formed over the years contribute to both programs' success and enable them to adapt to emergency and weather-related issues. Last summer, damage to the Shoshone power plant threatened to interrupt deliveries of water to the 15-Mile Reach of the Colorado River near Grand Junction, Colo. Colorado reservoir operators and private irrigation companies worked with the Upper Colorado River Program to quickly implement actions to meet all water users' needs, including the endangered fish.

Similarly, water users worked together this year to meet a variety of flow requests for research and construction activities on the San Juan River. Above-average flows into Navajo Reservoir provided the Bureau of Reclamation with operational flexibility that allowed for higher-than-average releases throughout the summer which benefited fish and wildlife and recreational interests.

Releases were reduced to accommodate two construction projects on the river: a trout habitat improvement project in the quality trout waters section of the river below the dam, and improvements to the diversion structure on a community ditch approximately 14 miles downstream of the dam.

Reclamation also worked closely with the San Juan River Recovery Program to ensure adequate and constant flows during some planned habitat mapping work in the endangered fish critical habitat area and to accommodate razorback sucker and Colorado pikeminnow stocking efforts.

The dedication and commitment of program partners offers hope that the endangered fishes can be recovered. Biologists see evidence that hatchery-raised, stocked razorback suckers are surviving and reproducing. Study results provide encouraging prospects for reestablishing razorback sucker populations throughout the upper Colorado River system. In fact, the U.S. Fish and Wildlife Service concluded in 2005 that Colorado pikeminnow and razorback sucker populations in the San Juan River are more secure today than during the 1980s and 1990s, and the threat of extinction has been reduced.

This is not to say that our work is complete. We still have a long way to go and many challenges ahead. We can say with pride, however, that we have made significant progress and, with our partners' support, will continue to move forward to achieve our goals. ◀

Recovery programs welcome new staff

The San Juan River Recovery Program expanded its staff this year with the addition of Biologist Anne Davis in February and Assistant Program Coordinator Sharon Whitmore in July.



ANNE DAVIS

Anne's experience with aquatic species and river habitats makes her well qualified to coordinate the many biological aspects related to recovery of endangered Colorado pikeminnow and razorback sucker in the San Juan River. Most recently she worked for the New Mexico Environment Department—Surface Water Quality Bureau, conducting extensive research of fish and plant species and associated riparian habitats for the Middle Rio Grande, Canadian, Chama and Santa Fe rivers. In 2006, she served as the project lead for the Middle Rio Grande Endangered Species Act Collaborative Program water quality monitoring study and as a principal investigator for a health monitoring study for the Rio Grande silvery minnow.

She also worked for the U.S. Geological Survey's Columbia Environmental Research Center and has contributed to several publications, including an illustrated field guide to assess health and reproductive factors of fish from the Colorado River basin.

Anne earned a bachelor's degree in fisheries and wildlife from the University of Missouri. Anne can be reached at 505-761-4712 or anne_davis@fws.gov.



SHARON WHITMORE

Sharon Whitmore's expansive background includes large river native and endangered species management and coordination of river basin, multidisciplinary efforts to preserve, conserve and restore native ecosystems primarily in the Missouri and Platte River basins. Most recently, she was the Platte River team leader for the U.S. Fish and Wildlife Service's (Service) Nebraska Ecological Services Field Office. While in Nebraska, one of her primary responsibilities was to manage releases from an account of water in Lake McConaughy, a mainstem reservoir on the North Platte River that was set aside in 1998 to benefit federally listed species in the central Platte River.

Sharon's experience also includes working at Gavins Point National Fish Hatchery, the Missouri River Coordinator's Office, Great Plains Fisheries Assistance Office and the U.S. Forest Service. She has a bachelor's degree in fish and wildlife sciences from New Mexico State University. Sharon can be reached at 505-761-4753 or sharon_whitmore@fws.gov.



MARY NELSON

The Upper Colorado River Recovery Program also welcomed new staff. Secretary Mary Nelson joined the program in August, filling the position vacated by Kathy Wall who retired to enjoy more time with her grandchildren. Mary brings a wealth of experience working with federal

programs. Most recently, she worked in the fisheries/ecological services department for the Service's Mountain-Prairie Regional Office. In that role, she provided administrative support for a variety of projects in the eight-state region related to hatchery operations, environmental contaminants, regulatory issues and wetlands. She also worked for the Platte River office in Denver as it transitioned to a full-fledged recovery program, and for the project management staff at the National Park Service's Denver Service Center.

Mary can be reached at 303-969-7322, ext. 225, or mary_nelson@fws.gov.



TOM CHART

Fishery Biologist Tom Chart assumed the role of instream flow coordinator in September, filling the position vacated by Gerry Roehm, who retired and is rumored to have hit the ski slopes nearly every day last season. In this role, Tom oversees management of stream flows in accordance with agreements and guidelines established to help recover endangered fishes in the upper Colorado River basin.

Tom brings more than 20 years of experience working with native Colorado River fish. Most recently, he worked for the Service's ecological services office in Salt Lake City on projects to recover endangered fish in the Colorado and Virgin river systems.

Before that, Tom was a biologist for the Bureau of Reclamation. He also worked for the Utah Division of Wildlife Resources in Moab.

Tom holds undergraduate and graduate degrees in fish biology from Colorado State University in Fort Collins. He can be reached at 303-969-7322, ext. 226, or tom_chart@fws.gov.



JANA MOHRMAN

Hydrologist Jana Mohrman assumed the duties of George Smith who retired to travel the country. Jana works with several cooperative water user groups to coordinate summer and spring peak flows in the Colorado River and deliveries of summer flows in the Yampa River from Elkhead Reservoir. She also oversees a gauging program that monitors flows in the Colorado and Yampa rivers to ensure that water is delivered for the endangered fish in accordance with recovery agreements.

Jana's extensive background in water-related issues includes 18 years as a refuge hydrologist for the Service's Mountain-Prairie Regional Office. Prior to that, she supervised a suspended sediment transport study in Yellowstone National Park.

Her federal career began with the Environmental Protection Agency in her hometown of Washington D.C., where she worked in the Office of Legislation and helped pass laws like Superfund. She holds a bachelor's degree in geology with an emphasis in hydrology from George Mason University.

Jana can be reached at 303-236-4486 or jana_mohrman@fws.gov. ◀

Study provides fish-eye view of San Juan River habitat

—by Mike Robertson, Fisheries Biologist, BIO-WEST, Inc.

Researchers with the San Juan River Recovery Program hope to gain a better understanding of how endangered fish view their world with data collected in August 2007 during a comprehensive habitat mapping study.

During the past few years of research and monitoring, biologists have made great advances in understanding the population dynamics of Colorado pikeminnow in the San Juan River. They have also successfully monitored habitat conditions in the river. One area that has been lacking in these studies is a clear understanding of how changes in habitat conditions affect the Colorado pikeminnow.

“Past research indicates that the calmer, shallower backwater habitat is important to larval and young juvenile endangered fishes,” said San Juan River Recovery Program Director Dave Campbell. “This type of habitat is low in abundance in the San Juan River and has declined substantially since 1995. Sampling for juvenile Colorado pikeminnow in the last several years indi-



ECOSYSTEMS RESEARCH FISHERIES TECHNICIAN DAN LAMARRA (LEFT) AND BIO-WEST FISHERIES BIOLOGIST MIKE ROBERTSON OBTAIN DATA AS PART OF A COMPREHENSIVE MAPPING STUDY ON COLORADO PIKE-MINNOW HABITAT IN THE SAN JUAN RIVER.

cates that they use other similar habitat not necessarily mapped by the standard mapping program.”

Because there are approximately 180 river miles between the confluence of the Animas and San Juan rivers and Lake Powell, habitat monitoring has

occurred on a broad scale. To try to close the gap in understanding the relationship of large-scale habitat changes on population dynamics of the species, the San Juan Recovery Program contracted with Keller-Bliesner Engineering, LLC, BIO-WEST, Inc. and Ecosystem Research

Institute (ERI) to coordinate habitat mapping efforts and fisheries sampling to ensure that data being collected are appropriate to address this question.

With experience gained from sampling Colorado pikeminnow during previous monitoring efforts, biologists with BIO-WEST organized a sampling effort in each of two river reaches with complex habitat features such as riffles, islands that create variable currents, and backwaters which are believed to be important to the fish.

Working in coordination with this effort, ERI researchers conducted habitat mapping in each of these two river reaches at a much higher resolution than the broad scale mapping previously done in the entire river. In each fish sampling location, the habitat was characterized at a scale which captures the features important to the fish, but also at a scale that matches the resolution of the habitat mapping efforts.

The mapping, combined with detailed channel topology measurements and hydraulic modeling, provides information about how this type of habitat is formed and maintained.

Information collected at each fish sampling location included the number and size of all captured fish; the technique used to sample fish; the river mile location; the Global Positioning System (GPS) location; the habitat type; cover features such as woody debris; the water temperature; the area sampled (length and width), depth and velocity; and the substrate type.

With the focus on increased awareness of how habitat changes in this dynamic river corridor affect habitat availability to, and ultimately, population abundance of Colorado pikeminnow, this project will provide a critical piece toward recovery efforts for this species.

“The first year study results are expected in early spring of 2008,” Dave said. “With an additional two or three years of data, there should be great advances in our understanding of the impact of habitat change on the Colorado pikeminnow. This information will be used to determine future habitat management actions.”

For more information, contact Dave Campbell, 505-761-4745, david_campbell@fws.gov.

Water 2025 Challenge Grant to benefit endangered fish

Endangered Colorado pikeminnows and razorback suckers in northeast Utah's lower Duchesne River will get a helping hand from local water irrigation companies with the award of a \$153,000 Water 2025 Challenge Grant to the Uintah Indian Irrigation Project Operations and Maintenance Company of Duchesne, Utah. The Upper Colorado River Endangered Fish Recovery Program (Recovery Program) will provide matching funds of \$217,580 to modify the Myton Townsite Diversion Dam on the Duchesne River to help implement flow recommendations for the endangered fish. The U.S. Fish and Wildlife Service (Service) approved those recommendations in 2004 as required in a biological opinion the agency issued in 1998. The recommendations call for a regime of spring high flows and summer base flows to sustain native fish populations.

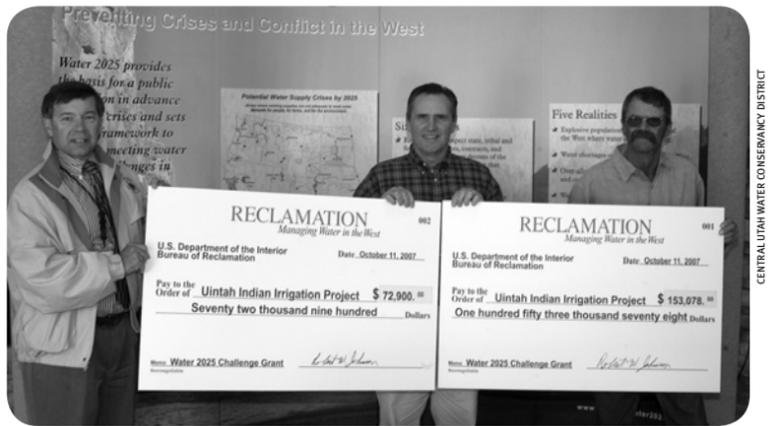
The award of this challenge grant is due in part to the efforts of the Duchesne River Work Group, a cooperative group formed in 2004 to implement the provisions of the biological opinion. Other work group participants are also contributing cash and in-kind services to complete the project. The Central Utah Water Conservancy District, Department of the Interior, Central Utah Project Office in Provo, Utah, and the Bureau of Reclamation (Reclamation) in Provo, Utah, are all participants.

“Water users, Central Utah Water Project personnel, and state and federal agencies have been working together to find ways to implement the recommended year-round flows,” said Environmental Programs Manager Terry Hickman, Central Utah Water Conservancy District. “We believe that rehabilitating this one diversion dam

will be the key to providing the recommended flows for endangered fish in most years. In addition, water users will get a first-class diversion facility on the river that will deliver their full water rights. Also, the river commissioner will have an automated facility that provides accurate measurements of river flows and irrigation diversions.

“It is important to emphasize the support of the Ute Indian Tribe in this project as well,” Terry added. “The water project is operated by and for the tribe and benefits a large number of tribal water users in the Uintah basin. The tribal business committee is very supportive of this plan to improve the management of tribal water.”

Administered by Reclamation, the Water 2025 Challenge Grant Program provides matching funds to irrigation and water districts, Western states,



RALPH SWANSON OF THE DEPARTMENT OF THE INTERIOR (LEFT) AND TERRY HICKMAN OF THE CENTRAL UTAH WATER CONSERVANCY DISTRICT (CENTER) PRESENT A CHALLENGE GRANT CHECK TO UTAH INDIAN IRRIGATION PROJECT OPERATIONS AND MAINTENANCE COMPANY BOARD CHAIRMAN SHAWN McCONKE. FUNDS WILL SUPPORT MODIFICATIONS TO THE MYTON DIVERSION DAM ON THE DUCHESNE RIVER IN UTAH TO BENEFIT ENDANGERED FISHES.

Tribes, and other local entities to develop innovative on-the-ground solutions to water supply problems. Applicants must provide at least 50 percent of

the costs of a water project under the program. For more information, contact Terry Hickman at 801-226-7174 or terry@cuwcd.com.

swimming upstream

Upper Colorado River Endangered Fish Recovery Program

U.S. Fish and Wildlife Service
P.O. Box 25486, Denver Federal Center
Denver, Colorado 80225