Winter 10

swimming upstream

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

Nonnative fish experts refine management actions through information exchange at annual workshops

Only 14 species or subspecies of native fish occurred historically in the Upper Colorado River system. During the past 100 years, at least 67 nonnative fish species were introduced. Some species were intentionally introduced by state and federal agencies to address public demand for sportfisheries during that time. Unintentional introductions occurred when species that were intentionally stocked in ponds and reservoirs for sportfishing escaped into the river system. Some of these escapees successfully established self-sustaining populations in areas occupied by endangered fishes. Unauthorized introduction of other nonnative fishes also occurred.

Some nonnative fish species did not flourish and are rarely encountered. Others are abundant and widespread and are known to prey upon endangered fish and compete with them for food and space in the river. The threat posed by nonnative fishes to endangered fishes continues to rise and is currently the biggest obstacle to endangered fish recovery.

The Upper Colorado River Endangered Fish Recovery Program (Upper Colorado Program) and the San Juan River Basin Recovery Implementation Program (San Juan Program) are implementing management actions to reduce certain nonnative fish populations to a level where endangered fishes can survive and re-establish self-sustaining populations. The species identified by scientific research as the greatest threat to the endangered fishes in the San Juan River are channel catfish and common carp. Smallmouth bass and northern pike are of greatest concern to the Upper Colorado Program.

Managing nonnative fishes

Although river habitat and fish populations differ between the two recovery programs, many nonnative fish management actions are the same. These include developing targets and implementing nonnative fish removal, assessing effects of management actions on fish communities and evaluating management methods. The programs also work with state and federal agencies and tribes to establish policies and agreements to manage sport fish in a manner compatible with endangered fish recovery.

Both programs use a variety of techniques to manage nonnative fishes:

- **Mechanical removal.** In 2010, researchers removed targeted nonnative fishes from 164 miles in the San Juan River and more than 500 miles in the Colorado, Duchesne, Green and Yampa rivers in the Upper Colorado River Basin. Removed fishes were used for study purposes, transported to local ponds or reservoirs for recreational angling, or euthanized.
- **Selective fish passages.** All fishes that attempt to use passages to move upstream are captured in a holding tank where they are sorted. Endangered and other native fishes are released into the river upstream of the passage and nonnative species are removed.
- **Screening reservoir outlets and intakes and berming ponds.** These actions limit or prevent nonnative fish escapement from ponds and reservoirs to reduce the number of nonnative fishes that enter the river where they could interact with endangered fishes. They also keep fish from getting trapped in canals.
- **Regulating stocking and changing fishing regulations and policies.** In 2009, the states of Colorado, Utah and Wyoming and the U.S. Fish and Wildlife Service renewed their commitment to ensure that sportfish management is compatible with endangered species recovery through enactment of revised Nonnative Fish Stocking Procedures. Colorado and Utah also changed bag and possession limits to increase harvest of the nonnative fish species of greatest concern. Although recreational fishing pressure on the San Juan River is limited and nonnative fishes are not currently being stocked in critical habitats of the endangered fish, maintenance of state and tribal sport fishing regulations and baitfish policies helps the San Juan Program limit nonnative fish distribution and abundance.

U.S. FISH AND WILDLIFE SERVICE

RESEARCHERS AT THE SAN JUAN PROGRAM'S NONNATIVE FISH WORKSHOP HELD IN 2010 CONFIRMED THAT THE SAN JUAN PROGRAM'S APPROACH TO MANAGING NONNATIVE CHANNEL CATFISH NEEDS TO CONTINUE. BIOLOGISTS, SUCH AS CHRISTOPHER LYONS OF THE U.S. FISH AND WILDLIFE SERVICE, CONTINUE TO CAPTURE FEWER ADULT FISHES EACH YEAR IN HIGH-PRIORITY SECTIONS OF THE SAN JUAN RIVER.

Making great strides

During the past decade the recovery programs have made great strides in the areas of research and implementation of nonnative fish management actions. Since 2002, the San Juan Program observed a significant decline in catch rates of common carp river-wide. Common carp are now less commonly found than the endangered Colorado pikeminnow.

TILDON JONES, U.S. FISH AND WILDLIFE SERVICE

U.S. FISH AND WILDLIFE SERVICE BIOLOGIST AARON WEBBER REMOVED A NONNATIVE NORTHERN PIKE FROM THE YAMPA RIVER NEAR CRAIG, COLO., IN 2009. LARGE NORTHERN PIKE HAVE BEEN REDUCED THROUGHOUT PORTIONS OF THE UPPER COLORADO RIVER BASIN SINCE INTENSIVE REMOVAL EFFORTS BEGAN.

While there has not been the same success with channel catfish, there are observable changes in their distribution and population structure.

Long-term trends indicate that the total length and size of catfish have decreased in the upper and middle study reach. Initially, intensive, repetitive nonnative fish removal efforts on the San Juan River focused primarily in the upper and lower sections. This effectively kept numbers of channel catfish lower in those sections and concentrated the majority of the catfish in the middle sections of the river. Intensive river-wide removal began in 2008 and continues today.

Upper Colorado Program researchers observed a similar response in the northern pike population in the Yampa River. Unfortunately, reservoirs and backwater sloughs that connect to the river upstream of removal efforts continue to be a source of northern pike reproduction. Young northern pike produced in those areas sustain numbers of juvenile-sized northern pike downstream of Craig, Colo., where the endangered fishes are found.

Smallmouth bass hang on tenaciously in the middle reaches of the Yampa River despite a steady increase in removal efforts since 2004 (see related story on page 3). Smallmouth bass numbers downstream of that stronghold area have declined in recent years, presumably as a result of removal efforts combined with higher flows that hinder the species' reproduction.

Evaluation and coordination

Both recovery programs continually evaluate management actions and modify them as needed to improve their effectiveness and cost efficiency. Researchers from both programs participate in the Upper Colorado Program's annual nonnative fish workshops where participants share information and learn new techniques and methods to assess and implement nonnative management actions.

In 2010, the San Juan Program hosted its own two-day nonnative fish

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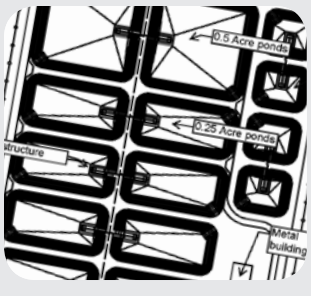
Endangered fishes use restored river habitat, p. 4
Former uranium mill tailing site functions as fish habitat and shallow water wildlife wetland.



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Lake Powell's San Juan River arm to be surveyed for endangered fishes in 2011

BONYTAIL

The endangered razorback sucker was a scientifically documented member of the San Juan River's native fish community as late as 1988. By the early 1990s, wild populations had essentially disappeared from the mainstem San Juan River. To help recover the species, the San Juan River Basin Recovery Implementation Program (San Juan Program) began a stocking program in 1994. With the exception of 1999, razorback sucker have been stocked in the San Juan River every year since that time.

Almost from the first stocking, razorback sucker moved downstream out of the San Juan River and into the San Juan River arm of Lake Powell which straddles the Arizona and Utah borders. Because of its isolated and remote location, this area has received the least survey and research effort among the Upper Colorado River subbasins, and the historic status of rare fish species, including the razorback sucker, is largely unknown.

Designated critical habitat for razorback sucker in the San Juan River Basin extends approximately 35 miles downstream into Lake Powell to Neskahi Canyon. Razorback sucker in this portion of Lake Powell are considered part of the San Juan River population of fish.

"Although we've done little formal research in the San Juan River arm of Lake Powell, we know that razorback sucker occupy that area and are moving into Lake Powell," said U.S. Fish and Wildlife Service Biologist Dale Ryden. "What we don't know is the size of the Lake Powell razorback sucker population and whether or not these fishes will gather to spawn in the San Juan River arm of Lake Powell."

The San Juan Program will launch a study early next year to help answer these questions. Following the lead of successful efforts at Nevada's Lake Mead, the San Juan Program plans to stock sonic-tagged razorback sucker into the San Juan River arm of Lake Powell in February 2011, with the goal that these fishes will lead researchers to razorback sucker already in the lake.

Trammel nets* and electrofishing** will be used to initially sample locations occupied by sonic-tagged fishes. Over time, the study site will likely expand to include other areas of the lake. All endangered fishes encountered will be checked for Passive Integrated Responder (PIT) tags, tagged if no tag is present, and returned to the lake.

Sampling is anticipated to occur throughout the roughly 35-mile section of Lake Powell between the old Piute Farms Marina and Neskahi Canyon. Sampling will take place during the entire potential spawning window for razorback sucker (March through June 2011) to try to locate, collect data and tag as many razorback sucker as possible. The primary intent of this work is to enable researchers to document spawning populations of razorback sucker and obtain a preliminary population estimate for this group of fish.

DEREK ELVERUD, UTAH DIVISION OF WILDLIFE RESOURCES

SAMPLING WILL BEGIN IN 2011 TO LOCATE RAZORBACK SUCKER AND OTHER FISH SPECIES OF INTEREST IN THE SAN JUAN RIVER ARM OF LAKE POWELL.

Researchers will also document the overall makeup of the fish community in the San Juan River arm of Lake Powell.

For more information, contact Dale Ryden, 970-245-9319, ext. 25, or dale_ryden@fws.gov.

A three-layered net that traps fish in two or more layers of mesh.

*** A small electric current placed on the water temporarily stuns the fish, causing them to rise to the surface of the river where they are netted.*

RAZORBACK SUCKER

Innovative fish screen to be constructed at Hogback Diversion Dam on San Juan River

On the San Juan River between Navajo Dam in northwest New Mexico, and Arizona's Lake Powell, there are many points of water diversion. These structures can impede fish movement, trap all life stages of fishes in diversion intakes and pin fishes against screens. One of the goals of the San Juan River Basin Recovery Implementation Program (San Juan Program) is to prevent the loss of fishes at diversion facilities.

When the San Juan Program began in 1992, five structures were identified as barriers or partial barriers to fish movement. Two of these, Cudei and Hogback diversion dams, are owned and operated by the Navajo Nation, a San Juan Program partner.

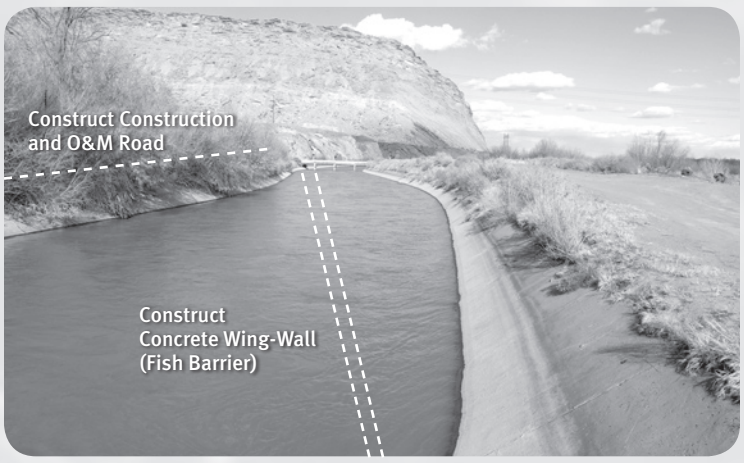
In 2001 and 2002, dam and canal modifications were constructed at Hogback and Cudei diversion dams to improve irrigation system reliability and to provide non-selective* fish passage for endangered Colorado pikeminnow and razorback sucker.

In 2004, the San Juan Program funded an assessment of the Hogback Diversion Canal to determine the need for additional screening devices. A total of 8,304 mostly small-bodied fishes were collected in the canal. Red shiner and speckled dace were the most abundant species followed by flannelmouth sucker and bluehead sucker. Additionally, 140 Colorado pikeminnow were collected in the canal, of which 129 were age-0 fishes that appeared to be from stocking activities. No razorback sucker were collected. Endangered fishes becoming trapped in the Hogback Canal could limit the San Juan Program's ability to recover these species in the San Juan River.

As a result of a 2007 Bureau of Reclamation (Reclamation) engineering study, the San Juan Program chose to construct a weir wall in the canal in lieu of traditional fish screens. Use of the weir concept allows only the upper portion (5 percent) of the water column to spill over into an afterbay for canal diversion. The weir wall guides fishes and sediment that enter the canal back to the river while allowing the "cleanest" water near the surface to be used for irrigation. Because the weir wall will skim only the top three inches of flow into the canal, the need for continual screening (which can be problematic on the San Juan River due to high bed and debris loads) can be prevented. This design will also potentially provide better fish exclusion over a traditional screening facility that may have intermittent operation. In addition, passive fish monitoring and/or tracking instruments can be installed at various locations on the structure to monitor the effectiveness of the project and the afterbay can serve as a holding/acclimation area for fish stocking purposes.

Principles learned from the Hogback Canal design will be used to construct these features on other diversions and canals. An operations and maintenance contract among Reclamation, the U.S. Fish and Wildlife Service, Public Service Company of New Mexico, and the Navajo Nation was executed in 2010 and environmental compliance is underway. Reclamation expects to award a construction contract in spring/summer 2011 with construction to begin October/November 2011 and the project to be completed in 2012.

For more information, contact Sharon Whitmore, 505-761-6352, or sharon_whitmore@fws.gov.



BUREAU OF RECLAMATION

MODIFICATIONS TO A CONCRETE FISH BARRIER WILL INCLUDE CONSTRUCTION OF A 330-FOOT CONCRETE WEIR WALL IN THE HOGBACK DIVERSION CANAL APPROXIMATELY 1/2-MILE DOWNSTREAM OF THE HOGBACK CANAL AND HEAD GATE WHERE AN EXISTING SLUICE STRUCTURE AND RETURN CHANNEL ARE LOCATED.

** A non-selective fish passage allows all fishes to move upstream through the passage. This differs from a selective fish passage where fishes are collected and sorted.*

Habitat restoration efforts to begin on San Juan River

COURTESY KELLER-BLEISNER ENGINEERING

KELLER-BLIESNER ENGINEER MIKE ISAACSON SURVEYS A SITE DOWNSTREAM FROM SHIPROCK BRIDGE ON THE SAN JUAN RIVER.

The New Mexico Environment Department will provide $398,070 in funding through its River Ecosystem Restoration Initiative (RERI) to The Nature Conservancy (TNC). It will be acting in cooperation with the U.S. Fish and Wildlife Service, the Bureau of Reclamation and the San Juan River Basin Recovery Implementation Program (San Juan Program) to reconnect secondary channels along the San Juan River to the main channel to create backwater habitat for endangered Colorado pikeminnow and razorback sucker.

The restoration efforts will take place in the San Juan River between the Hogback Diversion Dam and the New Mexico-Colorado state line on the Navajo Nation within New Mexico. TNC and the Navajo Nation are partners in the San Juan Program.

The San Juan River has become narrower, less complex and more channelized as nonnative vegetation such as Russian olive and salt cedar (tamarisk) has expanded in the San Juan River Basin. Many historic secondary channels that previously supported backwaters and low-velocity habitat in the San Juan River are now disconnected from the active river and have become armored with nonnative vegetation. Secondary channels offer important habitats for larval and juvenile fishes to feed, grow and escape predators. The RERI project will reconnect secondary channels to the main channel to create low-velocity habitats by lowering the mouth of secondary channels and removing nonnative vegetation. These reconnected secondary channels would be maintained by flows in the San Juan River.

Potential restoration sites were identified during a survey in August 2010 and design plans for between six to 10 sites were expected to be finalized by November. TNC has contracted with Keller-Bliesner Engineering for the identification and design work and the Navajo Nation will do the construction work. Construction is expected to begin in late summer or early fall 2011. An evaluation of the functionality of the restored sites will occur by summer or early fall 2012 after the reconnected secondary channels have been exposed to a full year of peak and base flows.

For more information, contact Scott Durst, 505-761-4739, or scott_durst@fws.gov.

COLORADO PIKEMINNOW

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Refining management actions

continued from page 1

workshop to provide a forum for its principal investigators to:

- Review the threats to the native fish community posed by nonnative fishes, focusing on the endangered fishes in the San Juan River Basin
- Review the findings and progress related to the San Juan Program's efforts to reduce the threat of nonnative fishes
- Identify native and nonnative fishes response to nonnative fish removal
- Review current methods used to manage nonnative fishes on the San Juan River
- Develop targets and milestones to evaluate the effectiveness of the nonnative fish management program
- Explore new methods and techniques that may apply to the San Juan Program's nonnative fish management program.

The goal was to develop a unified strategy to guide the San Juan Program's nonnative fish management program and to recommend ways to improve its effectiveness. Thirty nonnative fish experts attended, including principal investigators and Biology Committee members from both the San Juan and Upper Colorado programs, peer reviewers, San Juan Program staff and invited experts from outside of the Colorado and San Juan River basins.

Experts conclude intensive nonnative fish management needed

A resounding conclusion of the workshop was that the current intensive removal effort needs to continue. Electrofishing removal programs are a reasonable management option but continual, long-term removal may be required to keep their numbers down. Nonnative fish removal on the San Juan River has effectively eliminated common carp as a threat to the endangered fishes.

In slow-flowing habitats, monitoring data show that the density of smaller nonnative fishes has declined since 2003, and that of native fishes has been numerically dominant since 2004. Other less-common, small nonnative fish species are also increasingly rare.

To date, the native adult fish population has not shown positive population response to nonnative fish removal efforts. That may be the result of a limited time scope. Common carp have been in the San Juan River for more than 100 years and channel catfish for the past 30 to 40 years. Intensive river-wide removal on the San Juan River only began in 2008. When looking for responses among native fishes in connection to nonnative fish removal, looking only at the river's two rare, endangered fish species may not be the best indicator of progress.

Razorback sucker disappeared, and Colorado pikeminnow nearly disappeared, from the San Juan River. While nonnative fishes are removed, San Juan Program biologists try to rebuild the endangered fish populations through an aggressive stocking program. Any large-scale response from these two species may not be seen until levels of nonnative fishes are much lower and the numbers of endangered fishes have accumulated to the point they can successfully reproduce.

For these reasons, workshop participants agreed to focus their evaluation of the success of the nonnative removal program on a sustained reduction of nonnatives, at least initially. They identified possible modifications to the nonnative removal program. Some will be implemented in 2011, such as marking some channel catfish to track how the population is being impacted. Other measures will require further investigation before implementation.

Prevention key to managing nonnative species

The importance of prevention was a strong message that came out of the workshop. Each introduced nonnative aquatic species may prove to be an invasive species — a nonnative aquatic species that spreads, persists or multiplies in aquatic habitats, and poses ecological and/or economic liability. Introduced or stocked aquatic species may originate from authorized or illegal introduction, and either method undermines recovery actions.

No known single strategy will completely eliminate these unwanted nonnative species from the Upper Colorado River Basin. The recovery programs must continue their efforts to reduce nonnative fish populations to a level that minimizes or removes the threat to the endangered Colorado River fishes. The recovery programs will continue to support mechanical removal of nonnative fishes as one management tool to accomplish this recovery action.

The recovery programs will also use stocking procedures and other measures to prevent the further introduction of invasive species. Evaluation of data, results and methods, as well as ongoing coordination and collaboration between both recovery programs' partners, will continue to be key to the successful management of nonnative species in the Upper Colorado River Basin.

For more information, contact Sharon Whitmore, San Juan Program, 505-761-4753, or sharon_whitmore@fws.gov, or Pat Martinez, Upper Colorado Program, 970-245-9319, ext. 41, or patrick_martinez@fws.gov.

Agencies increase joint efforts to reduce smallmouth bass threat to endangered fishes in Yampa River

COLORADO DIVISION OF WILDLIFE

COLORADO DIVISION OF WILDLIFE AQUATIC TECHNICIANS (FROM LEFT) ANDREA SPONSELLER, JEFFREY BEHNCKE AND ANDREW NORDICK ELECTROFISH IN THE MOUTH OF A TRIBUTARY STREAM ALONG THE YAMPA RIVER, NEAR THE TOWN OF MAYBELL, COLO. SMALLMOUTH BASS, NORTHERN PIKE AND COLORADO PIKEMINNOW COMMONLY INHABIT THIS AREA DURING SPRING RUNOFF IN THE YAMPA RIVER.

Colorado Division of Wildlife (CDOW), Colorado State University (CSU) and U.S. Fish and Wildlife Service (Service) researchers joined forces this year to prevent an anticipated spike in numbers of nonnative smallmouth bass in the Yampa River. Based on scientific research, the Upper Colorado River Endangered Fish Recovery Program (Upper Colorado Program) identified this member of the sunfish family as a significant threat to endangered fishes because it eats other fishes and competes for food and space in the river.

In the past, each agency worked somewhat independently in specific sections of the Yampa River to remove adult smallmouth bass before they spawned. Recent research conducted when environmental conditions favored smallmouth bass reproduction increased knowledge of their life history. This information suggested that an additional approach in their removal would be beneficial in reducing smallmouth bass numbers.

"Drought conditions favored smallmouth bass spawning in 2007, resulting in a significant increase in young smallmouth bass that year," said John Hawkins, a researcher at Colorado State University, who coordinated the joint effort. "Those smallmouth bass that hatched in 2007 turned 3 years old this year, which is the age at which they can reproduce.

"We wanted to reduce or prevent this large, 2007 year class from reproducing and thereby further increasing the population," John said. "Using knowledge that we've gained over time, we know that in addition to removing large adults prior to spawning, we can be effective by removing smallmouth bass during their spawning period."

To increase their effectiveness, 18 researchers from three agencies simultaneously focused their efforts on 45 miles of the Yampa River, downstream from the town of Craig in northwest Colorado. This river section was identified as having high concentrations of adult smallmouth bass and a large amount of spawning habitat. Work took place during June and July, after spring runoff.

Researchers captured smallmouth bass from boats using an electrofishing technique that uses a small electric current to temporarily stun the fishes, causing them to rise to the surface of the river where they are netted. All fishes greater than 10 inches in size were relocated to Elkhead Reservoir. Smaller fish were euthanized.

Colorado Division of Wildlife Resources Aquatic Biologist Boyd Wright said the effort was well coordinated and highly effective.

"In addition to increasing our efficiency during the critical period when smallmouth bass were spawning, working collaboratively with CSU and Service crews led to an open exchange of observations and ideas, which was beneficial for all parties," he said. "I think each of our crews learned a lot from each other, which will ultimately increase our efficiency during portions of the field season when we work independently of one another."

As the newsletter went to press, researchers were analyzing data from this year's work. Findings will be reviewed at the Upper Colorado Program's Nonnative Fish Workshop to be held December 7-8, 2010, in Grand Junction, Colo.

For more information, contact John Hawkins, 970-491-2777, or jhawk@lamar.colostate.edu.

Burbot captured in Green River

On July 28, 2010, Utah Division of Wildlife Resources (UDWR) researchers found something they didn't want: a 21-inch burbot in the Green River below Flaming Gorge Dam. The fish was captured during an electrofishing study to recover and study endangered fishes in the Green and Colorado rivers.

Burbot is a nonnative fish from east of the Rocky Mountains that is a voracious predator, capable of breeding in both rivers and reservoirs. As a result, it can have a serious impact on both native and sport fish populations. Burbot also pose a major risk to native fish in the Green River.

UTAH DIVISION OF WILDLIFE RESOURCES

A NONNATIVE BURBOT FOUND IN THE GREEN RIVER BELOW FLAMING GORGE DAM IS CAUSE FOR CONCERN.

"We're concerned that burbot will negatively impact endangered fishes and other native fishes in the Green River," said Krissy Wilson, UDWR native aquatic species coordinator. "We've seen this happen before with other nonnative fish, including northern pike, red shiner and smallmouth bass."

The UDWR and its partners in the Upper Colorado River Endangered Fish Recovery Program are working together to determine the best way to address this latest threat.

In the meantime, the UDWR placed a "no-tolerance" fishing regulation on burbot in Utah. This means that there is no limit on the number of burbot an angler can catch, anglers may not release any burbot they catch, and all burbot must be killed immediately.

For more information, contact Mark Hadley, 801-538-4745, or markhadley@utah.gov.

JOANN PEREA-RICHMANN, SAN JUAN PROGRAM

EACH YEAR, THE UPPER COLORADO AND SAN JUAN PROGRAMS REACH OUT TO LOCAL COMMUNITIES TO PROVIDE INFORMATION ABOUT THE ENDANGERED FISHES AND EFFORTS TO RECOVER THEM. PICTURED HERE ARE YOUNGSTERS AT THE ANNUAL KIDS FISHING DAY AT JEMEZ SPRINGS STATE FISH HATCHERY, SPONSORED BY THE NEW MEXICO GAME AND FISH DEPARTMENT. FOR MORE INFORMATION, CONTACT JOANN PEREA-RICHMANN, 505-761-4712, OR JOANN_PEREA-RICHMANN@FWS.GOV, OR DEBBIE FELKER, 303-969-7322, EXT. 227, OR DEBBIE_FELKER@FWS.GOV.

Martinez joins Upper Colorado Program staff

Fishery Researcher Pat Martinez became the nonnative fish coordinator last June for the Upper Colorado River Endangered Fish Recovery Program. In this role, he develops and implements management plans to identify and reduce the threats of nonnative aquatic species to endangered fishes in the Upper Colorado River Basin.

Pat is an expert in fish populations in the Colorado River Basin. His research findings contributed to their management during his 26-year career with the Colorado Division of Wildlife. During that time, he developed improved methods to sample fish populations with new electrofishing standards. He also helped develop cutting-edge, scientific techniques to track fish movements among various habitats.

Pat had 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 fishes as well as continued warmwater sportfishery management.

Pat has published many peer-reviewed articles. He earned undergraduate and graduate degrees in fishery biology from Colorado State University in Fort Collins, Colo. He is the recipient of a Most Significant Paper Award from the American Fishery Society, a Lifetime Achievement Award from the Colorado Division of Wildlife, the Award of Excellence from the Colorado/Wyoming chapter of the American Fisheries Society and the Upper Colorado Program's Researcher of the Year Award.

ANGELA KANTOLA, UPPER COLORADO PROGRAM

PAT MARTINEZ

Summer spent working with endangered fishes best experience of my life

—by Koleby Thomas, Student Intern

TRAVIS FRANCIS, U.S. FISH AND WILDLIFE SERVICE

KOLEBY THOMAS HOLDS A RAZORBACK SUCKER RAISED AT THE OURAY NATIONAL FISH HATCHERY, GRAND VALLEY UNIT, IN GRAND JUNCTION, COLO.

My name is Koleby Thomas and I spent last summer as an intern with the U.S. Fish and Wildlife Service in Grand Junction, Colo., a partner of the Upper Colorado River Endangered Fish Recovery Program. I got this internship through Palisade High School and School District 51. The school program gives students the opportunity to work in a field that they are thinking of making a career. This program gives students a chance to see if the field is the one that they would like to pursue in life, and a half credit for every 60 hours that are spent on the job site.

During June through August, I took part in every activity that the biologists do. I mainly helped the seasonals with their work. I helped out at two fish passages and at the Grand Junction hatchery, and got to go out onto the river electrofishing. I saw what they have to do day-to-day to keep things working. On my first day, they sent me out trammel netting a small pond off of the Colorado River. That day was my first experience with any fishes on the Colorado River.

The first time that I encountered any of the four endangered fishes, outside of the hatchery, was the first time that I went out onto the river electrofishing. The first fish that I saw was a razorback sucker. I also saw a lot of nonnative fishes. Later that day, I caught a Colorado pikeminnow and that was the biggest fish that I had ever seen. To this point, I have never seen a bonytail or a humpback chub outside the hatchery. The job that I did the most was working at the fish passages. During that time, I saw most of the species of fish that live in the Colorado River, except the four endangered fishes.

Last summer's experience was one of the most fulfilling and best of my life. I look forward to doing this again next year and as a career for the rest of my life.

Editor's note: Koleby Thomas is a junior at Palisade High School in western Colorado. His coworkers welcomed his help and enthusiasm for recovering the endangered fishes. They look forward to working with him again next summer.

Former uranium mill tailing site now provides endangered fish habitat

Twenty years ago, an unsightly landfill along the Colorado River in western Colorado contained nearly 225,000 tons of uranium mill tailings and other hazardous materials. That's when the City of Grand Junction and the U.S. Department of Energy began to clean up the site and soon developed a partnership of local, state and federal agencies and organizations to restore the river habitat. Today, the site hosts native plants and trees and a paved trail provides recreational opportunities for people of all ages.

As cleanup activities took place, the Upper Colorado River Endangered Fish Recovery Program (Upper Colorado Program) worked with the other partners to ensure that the site was restored to provide seasonal floodplain habitat for endangered Colorado pikeminnow and razorback sucker.

Today, a notch placed in the embankment of the Colorado River allows water to flow into the reclaimed site in the spring when the river runs high. This develops into a shallow floodplain wetland that provides a sheltered feeding and resting area for the endangered fishes.

During the past decade, drought conditions prevented the site from flooding in most years. In 2008, higher river flows connected the river to the floodplain and a Colorado pikeminnow became the first endangered fish to use the restored habitat. In June 2010, three razorback sucker were captured in the wetland.

DOUG OSMUNDSON, U.S. FISH AND WILDLIFE SERVICE

U.S. FISH AND WILDLIFE SERVICE BIOLOGISTS LINDSEY LESMEISTER (LEFT) AND TRAVIS FRANCIS HOLD THE FIRST COLORADO PIKEMINNOW TO USE THE RESTORED FLOODPLAIN HABITAT. IT WAS DISCOVERED ON JUNE 9, 2008.

"Finding endangered fishes in this area confirms that they use it on a seasonal basis," said U.S. Fish and Wildlife Service Biologist Patty Gelatt, who oversaw completion of this project. "While we recognize that the number of endangered fishes captured has been small, our sampling efforts have been limited by low water and limited time and personnel."

During the winter of 2010-2011, the Upper Colorado Program will remove sediment that has built up in the connecting notch so that this habitat continues to function optimally.

Although the site was restored primarily to provide fish habitat, it has developed into a shallow water wetland that is valuable to birds and other wildlife and is frequently used by waterfowl, shorebirds and song birds.

"The Upper Colorado Program appreciates the cooperation of the City of Grand Junction and the other organizations that worked to restore this site which now contributes important habitat for Colorado River endangered fishes," Patty said.

For more information, contact Patty Gelatt, 970-245-3920, ext. 26, or patty_gelatt@fws.gov.

Recovery Program news and updates

WAYNE DAUB, U.S. FISH AND WILDLIFE SERVICE

Programs raise endangered fish awareness at National Scout Jamboree

Attendees at the 2010 Boy Scouts of America National Jamboree learned about endangered Colorado River fishes and water-related issues at a special exhibit hosted by the Bureau of Reclamation. More than 45,000 people attended the jamboree at Fort A.P. Hill, Va. The event celebrated the 100th anniversary of the Boy Scouts of America.

Scouts learned that there are four species of endangered fish that live only in the Colorado River; why these fishes are endangered and what is being done to recover them; how researchers track and monitor endangered fish populations; and what each scout can do to help conserve species.

SHARON WHITMORE, SAN JUAN PROGRAM

New Southern Colorado reservoir connects to San Juan River

Lake Nighthorse, near Durango, Colo., is starting to take shape. In August 2010, the lake reached 60 percent of its 120,000 acre-foot capacity. Part of the Animas-La Plata Project (ALP), it will supply municipal and industrial water to the Southern Ute Tribe, Ute Mountain Ute Tribe, Navajo Nation, ALP Water Conservancy District and the San Juan Water Commission. The lake is expected to reach full capacity in 2011 and is not yet open to the public.

ALP operations are closely tied to activities conducted by the San Juan Program and must not jeopardize endangered fish recovery.

For information: Sharon Whitmore, 505-761-4753, or sharon_whitmore@fws.gov.

COURTESY DIRK MILLER

Larry Kolz receives AFS Award of Merit

Nationally renowned electrofishing researcher and educator Larry Kolz was honored in late 2009 with the Award of Merit from the Fisheries Management Section of the American Fisheries Society. While his scientific contributions are many, this award was granted, in part, for his work to refine electrofishing as a technique to sample fishes.

"Larry's work on electrofishing theory and his efforts to communicate it to fisheries biologists helped advance the fisheries profession," said FMS-AFS President Dirk Miller. "His work led to improvements in sampling efficiency while helping to reduce fish injury." Researchers use Larry's techniques as they work to recover endangered fishes.

For information: Pat Martinez, 970-245-9319, ext. 41, or patrick_martinez@fws.gov.

Native Fish IN TROUBLE!

WHY ARE THEY ENDANGERED?

WHAT IS BEING DONE?

Living Planet Aquarium features endangered fishes

This private facility in Sandy, Utah, worked with the Utah Division of Wildlife Resources and the recovery programs this year to establish an interpretive exhibit that features endangered bonytail and razorback sucker. The aquarium plans to move to a new facility in 2012, at which time there may be additional educational opportunities.

Giving visitors a close look at live endangered fishes is important because they can see each fish's unique features and learn about their role in the river's ecosystem. The recovery programs appreciate the many organizations that help promote endangered fish recovery through these types of exhibits.

For information: 801-355-3474 or www.thelivingplanet.com.

swimming upstream

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 Felker • Sharon Whitmore
Co-editors

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U.S. Fish and Wildlife Service
Water Development Interests

Program director's message

By Dave Campbell, Program Director
San Juan River Basin Recovery Implementation Program

As the Upper Colorado and San Juan recovery programs' non-federal partners continue to work with members of Congress to secure continued funding at current levels through 2023, their efforts have highlighted the strengths that have made the recovery programs national models for achieving conservation through collaboration.

Having worked in many areas throughout the United States and overseas, I have had the opportunity to participate in a wide variety of approaches to environmental conservation. None were as successful as the Upper Colorado and the San Juan recovery programs. Our programs' successes have always been grounded in the tireless commitment of all of their partners. Year after year, the recovery programs demonstrate that public/private partnerships can effectively recover endangered species and resolve Endangered Species Act-related conflicts.

Based on this proven effectiveness, state and federal leaders (including Congress), through various administrations, continue to provide bipartisan support and critically important funding for these recovery programs.

During a time in our nation's history when almost no one seems to agree on anything, the recovery programs continue to develop and implement innovative solutions to meet the water needs of growing Western communities while also benefiting the endangered fishes. Stakeholders are actively engaged at all levels — decisionmaking, the science of recovery and implementation of recovery actions.

While the recovery programs rely on recovery goals and sound science to develop and implement management actions, there is also a commitment to ensure that water-management actions benefit recreational, municipal and agricultural water users, as well as the endangered fishes.

As we move forward toward 2023, both programs will still face their share of challenges. Nonnative fish, for example, are a biological threat to recovery with the potential to quickly dominate the physical and financial resources available to both programs. Climate change raises another set of concerns. Although we have learned a lot about the effects of global warming on the Colorado River Basin as a whole, we are a long way from translating what we know into what the effects may be on the endangered fishes and future recovery actions.

With these challenges, and others we will face, I remain confident that the recovery programs have the right mix of partners, researchers and staff to make the appropriate decisions and implement actions that will enable us to achieve our goals.

In closing, I am proud to work for the San Juan Program and with the Upper Colorado Program. Both recovery programs exemplify how to move forward in a world with many competing interests. It is refreshing to work with creative and dedicated people who truly believe in our mission. I want to thank the recovery programs' partners, staff, volunteers and many others for their hard work and dedication, which will lead to our success.

Dave Campbell

BONYTAIL

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HUMPBACK CHUB

Antennas monitor endangered fish movement to critical habitat

A new passive integrated transponder (PIT) tag system became operational in August 2010 at a fish passage at the Price-Stubb Diversion Dam on the Colorado River in western Colorado. The system continuously detects movement through the passage of endangered fishes that are PIT tagged. A PIT tag is a small microchip in a glass capsule like those placed in a dog or cat at a veterinary clinic for individual identification.

Designed by Biomark, Inc., the system runs on solar power and consists of four, 6-foot by 5-foot antennas attached to the box culvert at the top of the passage. When a fish with a PIT tag uses the passage, the system sends data to biologists via phone. The system provides remote sensing and is built to withstand the flows and debris of the Colorado River.

The system became operational on August 12, 2010. Four days later, it detected two Colorado pikeminnow. One was originally caught in 1999 and has been handled three other times within 10 miles of the passage. The other was tagged in 2009, 130 miles downstream.

"We anticipate receiving important information about all four species of endangered fish from this remote sensing structure," said U.S. Fish and Wildlife Service Project Leader Michelle Shaughnessy. "This tracking system will help identify the type and number of species that move through the passage and inhabit this river reach."

BOB BURDICK, U.S. FISH AND WILDLIFE SERVICE

CONCRETE PILLARS, PICTURED AT LEFT, ARE PART OF THE FISH PASSAGE AT THE PRICE-STUBB DIVERSION DAM. JUST TO THE RIGHT OF THE PILLARS ARE TWO WHITE ANTENNAS. EACH SOLAR-POWERED, 6-FOOT BY 5-FOOT ANTENNA SCANS TAGGED FISHES AS THEY MOVE UP OR DOWN THE RIVER THROUGH THE FISH PASSAGE. AN ADDITIONAL TWO ANTENNAS ARE LOCATED BEHIND THE CONCRETE PILLARS.

Construction of the Price-Stubb fish passage was completed in summer 2008 and removed the last barrier to fish migration in 290 miles of the Colorado River from Utah's Lake Powell to the upper end of critical habitat near Rifle, Colo.

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

Hawkins named outstanding researcher of the year

Colorado State University (CSU) Research Associate John Hawkins was named 2010 Outstanding Researcher of the Year by the Upper Colorado River Endangered Fish Recovery Program (Upper Colorado Program). John is one of the foremost experts on native and endangered fishes in the Colorado River System, with a focus on the fishes of the Yampa River, one of the last free-flowing rivers in the American West.

John's career began in 1979 as a volunteer with CSU's Larval Fish Laboratory in Fort Collins, Colo., and continued for several years seasonally with the Colorado Division of Wildlife, the U.S. Fish and Wildlife Service and the National Park Service. During that time, he and other researchers worked to uncover the life history of Colorado pikeminnow. That early work serves as a benchmark that describes the river system prior to the major changes brought about by predatory, nonnative fish species and provides a basis for management actions to recover endangered fishes in the Yampa River Basin.

"We used John's data to help us determine the number of nonnative fishes we needed to target for removal to reduce their threat to the endangered fishes," said Upper Colorado Program Director Tom Chart.

John has observed many ecological changes in the Yampa River ecosystem, including a trend toward fewer native fishes and increased numbers of nonnative fishes. "The Yampa River Basin has a strong presence in my heart," he said. "The landscape, natural resources and the people of that valley are very special to me. I think that good science will help us understand how these fishes make a living and my hope is that we can use that knowledge to provide good stewardship to ensure that these species exist for future generations."

John's research, while varied, has focused on information that contributes directly to the recovery of the endangered fishes. He has studied Colorado pikeminnow and humpback chub migration and early life history, fish community structure in the Yampa and Little Snake rivers, fish age and growth, the effects of nonnative fishes on native fish communities, and management techniques that reduce the impact of nonnative fishes. His research findings are published in numerous technical reports and publications.

DON TUTTLE, III, CSU LARVAL FISH LAB

RESEARCHER OF THE YEAR JOHN HAWKINS

Since 1983, John has been a research associate with CSU's Larval Fish Laboratory, Department of Fish, Wildlife and Conservation Biology. He earned a bachelor's degree in zoology and a master's degree in fishery and wildlife biology from CSU.

Past Researcher of the Year recipients Bob Burdick and Ed Wick co-presented this year's award.

"I've worked with John early in both of our careers on the Yampa River and have been professionally acquainted with him for about 30 years," Bob said. "There is no question in my mind that he has exceeded the standard of a longstanding commitment in assisting to recover endangered Colorado River fishes and contributing significantly to the knowledge of their life history and ecological needs."

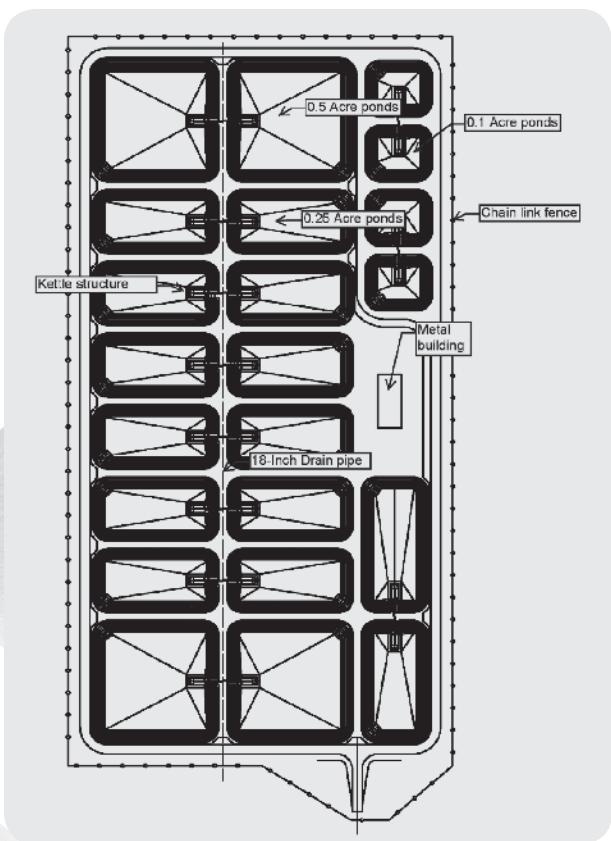
In accepting the award, John acknowledged that he is fortunate that his life's work has taken place on one of the most scenic and amazing rivers in the West. "As pleasant as that is," he said, "the true rewards of my career are working with outstanding individuals who are dedicated to recovering these rare and special fish."

Construction of Horsethief Canyon Native Fish Facility to begin during winter 2010

The Bureau of Reclamation (Reclamation), in cooperation with the U.S. Fish and Wildlife Service (Service), is working on the design of a facility in western Colorado to hold and rear endangered Colorado River fishes. The proposed site is river bottomland west of Fruita, Colo., in Horsethief Canyon State Wildlife Area. The federal government purchased this property to offset the impacts of the Grand Valley Unit of the Colorado River Basin Salinity Control Project.

Raising and stocking genetically sound populations of endangered fishes to achieve self-sustaining populations is a high priority of both the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program. Without grow-out ponds, production of endangered fishes of optimal size and numbers for stocking cannot be ensured and certain research in the area of genetics and propagation will be hampered.

The primary use of the Horsethief Canyon Native Fish Facility (Facility) is to provide both recovery programs with grow-out ponds for endangered razorback sucker. The Facility is also being considered to hold other endangered species if needed in the future.



The Facility will consist of 22 ponds, ranging in size from 0.1 acre to 0.5 acre. The total pond acreage is approximately 6.2 acres. Each pond will be lined with a geomembrane fabric to reduce loss due to seepage and to facilitate cleaning of the ponds. The ponds will operate at depths of five to six feet. Each pond will have a concrete kettle structure that allows it to be drained, maintains water levels during operation and provides an area for the fish to be concentrated when the time comes to be relocated.

The configuration of the ponds is shown above. The ponds will be constructed at an elevation that will prevent overtopping up to the 100-year flood event. The Facility will be fenced to prevent river otters from entering the ponds and to preclude entry by the public. It will also include a small metal building to store maintenance equipment and to allow sorting and handling of the fish.

The Service will operate and maintain the Facility which will reduce, if not eliminate, the need to lease private ponds. Expected to become operational in fall 2011, the Facility will enable the Service to meet its annual stocking targets (approximately 15,000, 12-inch razorback sucker).

For more information, contact Civil Engineer Kevin Moran, Bureau of Reclamation, Western Colorado Area Office, 970-248-0635, or kmoran@usbr.gov.

RAZORBACK SUCKER

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Study confirms humpback chub hang on in Yampa River within Dinosaur National Monument

NATIONAL PARK SERVICE

NATIONAL PARK SERVICE BIOLOGIST MELISSA TRAMMELL ANALYZES *GILA* SPECIES HELD AT THE J. W. MUMMA NATIVE AQUATIC SPECIES RESTORATION FACILITY IN ALAMOSA, COLO. SHE WORKED WITH OTHER STAFF TO DISTINGUISH HUMPBACK CHUB FROM ROUNDTAIL CHUB.

In October 2007, U.S. Fish and Wildlife Service (Service) and National Park Service biologists collected 400 young (less than 4 inches) native fishes of the *Gila* genus from the Yampa River in Dinosaur National Monument in northwest Colorado. Although researchers suspected that most of these fishes were roundtail chub (*Gila robusta*), they thought that some could be endangered humpback chub (*Gila cypha*). The Upper Colorado River Endangered Fish Recovery Program (Upper Colorado Program) conducted the study as part of efforts to recover the endangered humpback chub.

Concerns about the future of the humpback chub led to this study. One of six known humpback chub populations is found in the Yampa and Green rivers in Dinosaur National Monument. Downward trends in some of these populations have been attributed to increased numbers of nonnative fishes and habitat changes associated with dry weather and low river flows.

Because the two *Gila* species are difficult to tell apart when young, they were transported to two hatcheries until they grew large enough to identify. The Ouray National Fish Hatchery, Randlett Unit, near Vernal, Utah, and the State of Colorado's J.W. Mumma Native Aquatic Species Restoration Facility in Alamosa, Colo., each received 200 fishes.

Ouray Hatchery fishes were sorted in 2009. The hatchery retained all humpback chub and returned the roundtail chub to the Green River in Utah during fall 2009. This year, National Park Service Biologist Melissa Trammell worked with Mumma Hatchery staff to sort the 122 *Gila* fishes remaining at that location. Some had been lost during three years at the facility, mainly due to bird predation.

Melissa and Mumma Hatchery staff identified the majority of the fishes as roundtail chub. Those were tagged for release back into the Yampa River within Dinosaur National Monument during fall 2010. Ten fishes identified as humpback chub will be transported to the Ouray Hatchery by year's end where they will be held with the other 19 humpback chub from this study to serve as a refugia and possible broodstock.

Tissue from the fishes identified as humpback chub held at the Randlett Unit were provided to Dexter National Fish Hatchery & Technology Center in Dexter, N.M., for genetic analysis. Genetic markers from this analysis indicate that all of the fishes in the study are hybrid. This means that they are likely offspring of both humpback and roundtail chub, unlike humpback chub collected in the Green River in Desolation/Gray canyons in Utah, and roundtail chub found in Muddy Creek, Wyo., which appear to be pure.

"Genetic testing is a requirement in the development of any broodstock, and would be completed if we find the need to raise humpback chub in hatchery facilities," said Upper Colorado Program Propagation/Research Coordinator Tom Czapla. "Completion of this study is a significant first step toward understanding humpback chub in the Upper Basin rivers."

As standard practice, the states 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 Czapla, 303-969-7322, ext. 228, or tom_czapla@fws.gov.

Navajo Nation welcomes new native fish biologist

Last May, the Navajo Nation Department of Fish and Wildlife (NNDFW) welcomed Native Fish Biologist James Morel to its staff at the agency's Nenahnezad Chapter House in Fruitland, N.M. James and his team of NNDFW technicians currently aid the San Juan River Basin Recovery Implementation Program's recovery efforts through the operation of a fish passage at the Public Service Company of New Mexico Weir and maintenance of a grow-out facility for endangered fish on tribal lands. His team also initiates independent and collaborative native fish research and management projects throughout the Navajo Reservation.

James has a master's degree in fish, wildlife and ecology from New Mexico State University in Las Cruces. His graduate studies focused on examining various components of channel catfish population dynamics in the San Juan River in New Mexico and Utah. He also has a bachelor's degree in wildlife conservation (fisheries option) from Southeastern Oklahoma State University in Durant.

James has extensive fisheries research experience in Oklahoma, New Mexico and Texas. His current scientific interests include examining fish communities in the southwestern United States, population dynamics, and interactions between native and nonnative fish. James also has a research interest in Central American fish communities, through an ongoing independent endeavor which is conducted primarily in Belize.

James can be reached at jmorel@nndfw.org.

COURTESY NAVAJO NATION DEPARTMENT OF FISH AND WILDLIFE

PICTURED FROM LEFT: WILDLIFE TECHNICIAN ALBERT LAPAHIE, NATIVE FISH BIOLOGIST JAMES MOREL AND WILDLIFE TECHNICIAN AARON THOMPSON OF THE NAVAJO NATION DEPARTMENT OF FISH AND WILDLIFE.

swimming upstream

Upper Colorado River Endangered Fish Recovery Program

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