

swimming upstream

Upper Colorado River Endangered Fish Recovery Program

Biologists take advantage of high spring flows to conduct important research

Mother Nature helped provide the perfect flow conditions this year to enable biologists to conduct four important research studies in the Green River in northeast Utah to gain information needed to help recover the razorback sucker. Designed in cooperation with the Upper Colorado River Endangered Fish Recovery Program (Recovery Program), the studies had been postponed for several years due to drought.

Three of the studies focused on learning how drifting razorback sucker larvae are transported by water currents out of the fast-flowing river into the calmer and more productive waters of floodplain wetlands that serve as nursery habitat. The fourth

study focused on measuring the amount of sediment deposited onto a razorback sucker spawning site.

Successful completion of these studies depended on high spring flows that provide the habitat conditions that razorback suckers need to spawn and connect the river to floodplain nursery areas.

"This spring, the U.S. Bureau of Reclamation helped us keep a close eye on weather and river flow forecasts to determine if this would be the year we could conduct these studies," said Recovery Program Director Bob Muth. "When we realized that snowpack and warm spring temperatures would likely result in the high flows we needed, our partner agencies quickly rallied to launch the studies.

We knew we would have a narrow window of opportunity to get out on the river and conduct our work."

The Bureau of Reclamation aided the research by releasing some additional water from Flaming Gorge Dam for two days before and after the peak flow. This helped support the necessary flow conditions. For several days in May, more than 20 researchers and volunteers worked around the clock to simultaneously conduct the various studies.

The Utah Division of Wildlife Resources (UDWR) took the lead to evaluate larval transport and habitat use. At each targeted flow, they released 3 million biodegradable, color-coded beads that simulated drifting larvae, and between 100,000 and 400,000 marked razorback sucker larvae at razorback sucker spawning areas near Jensen, Utah.

Ouray National Fish Hatchery staff produced the larvae needed for the experiment and marked the otoliths (inner ear bones) before release with tetracycline using a procedure developed by Colorado State University's Larval Fish Laboratory (see illustration on page 3). UDWR staff later captured the larvae and beads in drift nets as they entered selected floodplain habitats, some as far as 54 miles downstream from the spawning areas.

At the same time, staff from Tetra Tech, an engineering firm hired by the Recovery Program, obtained on-the-ground measurements of inflows to habitats to determine if modifications to both manmade and natural levees would help drifting razorback sucker

Study results

Although samples and data from the studies are still being processed and analyzed, some preliminary findings indicate:

- **Floodplain wetlands along the Green River behaved as expected during spring runoff in areas where the Recovery Program had created openings in natural and manmade levees to restore the river-floodplain connection.** Beads drifted into upstream levee openings during all levels of study flows. In contrast, beads drifted into sites with lateral or downstream openings only during rising flows. This information will help determine which sites should be considered for further modification to better capture drifting wild razorback sucker larvae.
- **Many beads drifted as far as 54 miles downstream from the spawning bar,** supporting biologists' beliefs that floodplain wetlands on the Ouray National Wildlife Refuge are important nursery habitats for the razorback sucker and would contribute significantly toward recovery of the species.
- **High flows moved sediment off of the razorback sucker spawning sites, creating clean gravel and cobble beds to enable razorback sucker to successfully reproduce.** Before this study occurred, researchers were concerned that rather than move sediment off of the gravel beds, the flows would bury them with sediment.

This fall, the Utah Division of Wildlife Resources is processing drift net samples for fish larvae to provide to Colorado State University's Larval Fish Laboratory where researchers will identify both wild and stocked razorback sucker larvae. Researchers will use this information to compare with data collected from the beads.

larvae gain access to nursery habitats.

While all of this work took place on the river, aerial photos were taken during rising flows to help biologists understand how much floodplain is covered with water at various flows.

"Razorback suckers spawn during increasing and highest spring runoff flows," said Recovery Program Habitat

Coordinator Pat Nelson. "After several days, the eggs hatch, larvae emerge from the spawning gravel and then begin drifting down river. If larvae remain in the river, they do not survive. If they can reach suitable floodplain nursery habitats, survival has been documented. One of the remaining

—continued on page 3



UTAH DIVISION OF WILDLIFE RESOURCES

UTAH DIVISION OF WILDLIFE RESOURCES STAFF RELEASED 3 MILLION COLOR-CODED BEADS INTO THE GREEN RIVER TO SIMULATE DRIFTING RAZORBACK SUCKER LARVAE. STUDYING THE MOVEMENT OF THE BEADS MAY GIVE RESEARCHERS A BETTER UNDERSTANDING OF HOW WATER CURRENTS TRANSPORT RAZORBACK SUCKER LARVAE.

In this issue



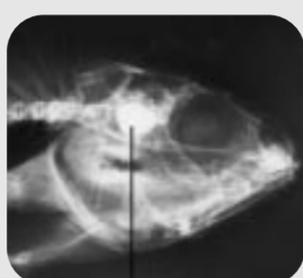
Fish screens installed on two major canals, p. 2

Grand Valley water districts partner with the Recovery Program to benefit people and fish.



Grand Junction tells a fish story, p. 2

The City of Grand Junction installs interpretive signs along the Colorado Riverfront Trail.



"The ear bone's connected to the ...," p. 4

Researchers study the ear bones of sunfish to learn origin and movement patterns.



News from the San Juan Recovery Program, p. 5

Dave Campbell assumes program coordinator role for the San Juan River Recovery Program.



Joy to the fishes and the people, p. 6

Cooperative agreement ensures water needs are met while recovering endangered fish.

Grand Valley water districts partner with the Recovery Program to construct and install fish screens on two major canal systems

Redlands Water and Power Company and Grand Valley Water Users' Association managers worked with the Upper Colorado River Endangered Fish Recovery Program to design and construct fish screens at their large canals in western Colorado. The screens will prevent endangered and other fish from entering the canals where they could become trapped. The screens may also benefit water users by removing debris from the canals.

The U.S. Bureau of Reclamation (Reclamation) oversaw the projects that were completed this fall. The new screens were designed to include features that address site-specific river

conditions unique to the Colorado River basin. They are similar to the pilot screen installed in 2002 in a nearby irrigation canal owned and operated by the Grand Valley Irrigation Company (GVIC).

The Redlands Water and Power Canal fish screen was designed to screen approximately 850 cubic feet of water per second (CFS). The fish screen is V-shaped and consists of 32, 10-foot by 10-foot panels. The Grand Valley Project's fish screen, constructed in the Government Highline Canal, is designed to screen approximately 1,640 cfs. The W-shaped screen consists of 44, 12-foot by 12-foot panels.

The individual screen panels for both fish screen projects are constructed of stainless steel, wedge wire with slot openings less than 3/32-inch. The panels are supported by structures constructed of reinforced concrete and galvanized structural steel. Both fish screen projects include bypass canals, trash racks with automated raking equipment and large-diameter, buried pipes to return the fish to the adjacent river system.

In addition to fish screens, other completed capital projects include construction of fish passages at three diversion facilities: the Redlands diversion dam on the Gunnison River and the GVIC and Grand Valley Project diversion dams on the Colorado River.

Completion of a fish passage at the Price-Stubb diversion dam will remove the remaining barrier to fish movement on the Colorado River. The Recovery Program is working with recreational interest groups, the Town of Palisade and Mesa County to incorporate a whitewater park into the construction of this fish passage which is scheduled for completion in 2007. When this passage becomes operational, endangered fish will regain access to 110 miles of critical habitat in the Colorado and Gunnison rivers that has been blocked for nearly a century.

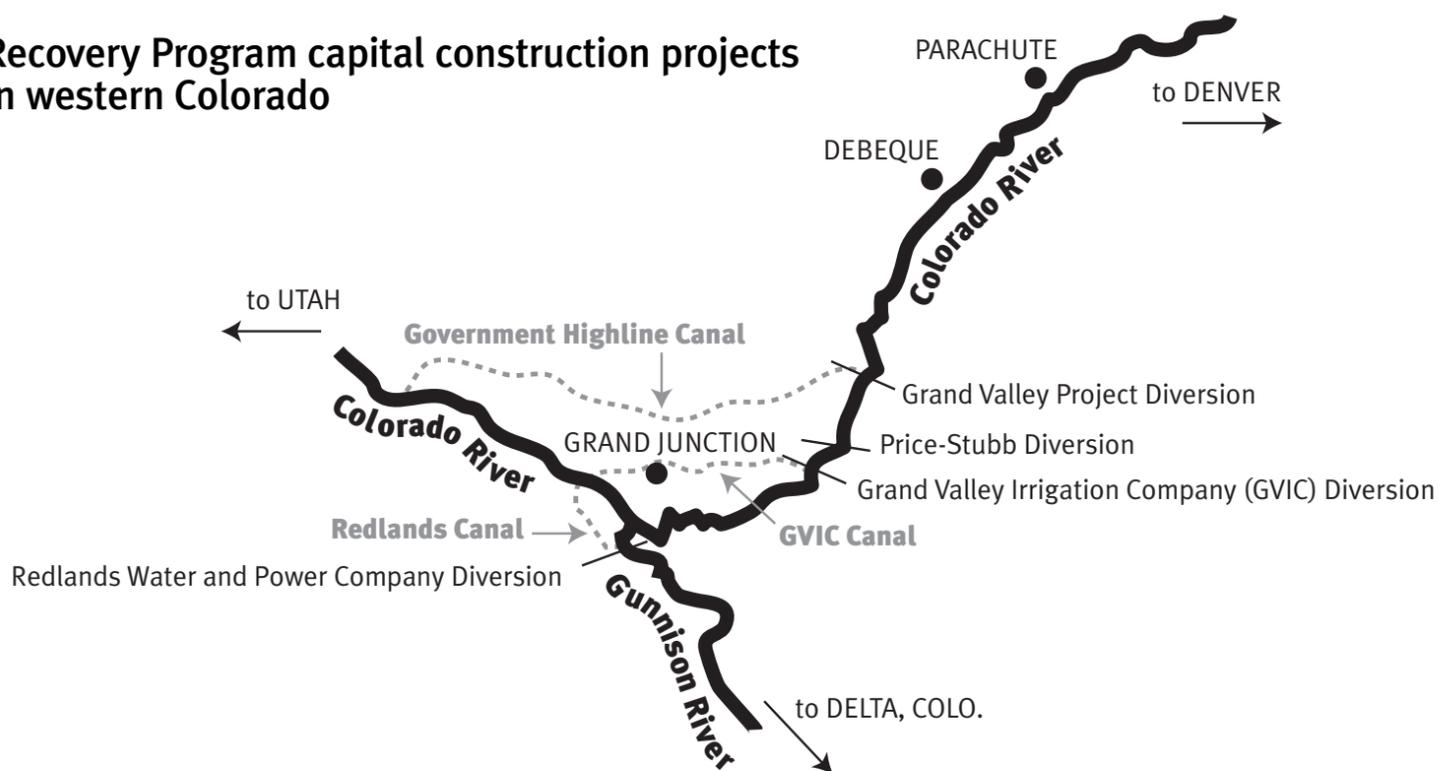
"As one of our partners, the Bureau of Reclamation plays an extremely important role in overseeing the design and construction of these large projects," said Recovery Program Director Bob Muth. "Reclamation does an outstanding job of coordinating project details with water users, city and state officials, and contractors while working within strict budgets and construction schedules. The Recovery Program's success is a direct result of the voluntary cooperation of water users and others in the Grand Valley who continue to support our efforts."

The Recovery Program also worked with the Grand Valley Water Management Project to install seven canal check structures in the Grand Valley Project Government Highline Canal in 2002. This effort to keep more water in the irrigation canals by preventing it from spilling out of the canals surpassed all expectations in terms of measurable water savings: 46,846 acre-feet (af) in 2002, 43,089 af in 2003 and 42,582 af in 2004. Substantial savings in 2005 are anticipated.

"These water savings reduced the impacts of severe drought on all water users in the Grand Valley and helped ensure that water was available to benefit the endangered fish," said Brent Uilenberg, technical services division manager, Reclamation.

For more information, contact Justyn Hock, 970-248-0625, jhock@uc.usbr.gov.

Recovery Program capital construction projects in western Colorado



A FISH SCREEN INSTALLED AT THE REDLANDS WATER AND POWER COMPANY DIVERSION DAM AND CANAL BECAME OPERATIONAL IN 2005. THE FISH PASSAGE BECAME OPERATIONAL IN 1996.



A FISH PASSAGE (SEE ARROW) CONSTRUCTED AT THE GRAND VALLEY IRRIGATION COMPANY DIVERSION DAM AND CANAL BECAME OPERATIONAL IN 1998. THE FISH SCREEN BECAME OPERATIONAL IN 2002.



A FISH PASSAGE IS SLATED FOR 2007 AT THE PRICE-STUBB DIVERSION DAM.



A W-SHAPED FISH SCREEN WAS INSTALLED THIS YEAR AT THE GRAND VALLEY PROJECT DIVERSION DAM AND CANAL. CANAL CHECKS BECAME OPERATIONAL IN 2002, AND A FISH PASSAGE COMPLETED IN 2005 WILL BECOME FULLY OPERATIONAL UPON COMPLETION OF THE PRICE-STUBB FISH PASSAGE IN 2007.

City of Grand Junction helps tell story of recovery

The City of Grand Junction helped develop and install six interpretive signs and a custom-shaped Colorado pikeminnow bench along the Colorado Riverfront Trail in western Colorado to tell the story of the area. In the mid-20th century, this area was excavated for gravel. The site later became a landfill where municipal waste and uranium mill tailings were deposited. When the landfill was full, the property became an auto salvage yard. Uranium mill tailings and other waste leaked into the river and polluted the water, making it unsafe for people or wildlife.

The City of Grand Junction purchased the site in 1990. The U.S. Department of Energy then removed nearly 225,000 tons of uranium mill tailings and other hazardous waste. Later, a partnership of local, state and federal agencies and organizations came together to restore the river habitat by making a notch in the embankment that allows spring high water flows to enter the area and create a floodplain wetland that serves as a nursery environment for young endangered fish. The city planted native plants and trees on the reclaimed site and constructed a riverfront trail. Today, people of all

ages enjoy a variety of recreational opportunities including walking, biking and wildlife viewing.

"We were pleased to have an opportunity to help restore nursery habitat for endangered fish and to help tell the story about the importance of the Colorado River to people, fish and wildlife," said Greg Trainor, utilities manager for the City of Grand Junction.

The Colorado Riverfront Trail interpretive project was a cooperative effort of the City of Grand Junction, the Colorado Riverfront Commission, the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service and the Recovery Program.



CITY OF GRAND JUNCTION PARKS PLANNER SHAWN COOPER (LEFT) AND UTILITIES MANAGER GREG TRAINOR HELPED DEVELOP AN INTERPRETIVE SITE ALONG PROPERTY RECLAIMED TO PROVIDE NURSERY HABITAT FOR ENDANGERED FISH.

Spring flows continued from page 1

pieces of the razorback sucker life history puzzle is to determine how to get drifting larvae from the river and into suitable floodplain nursery habitats.”

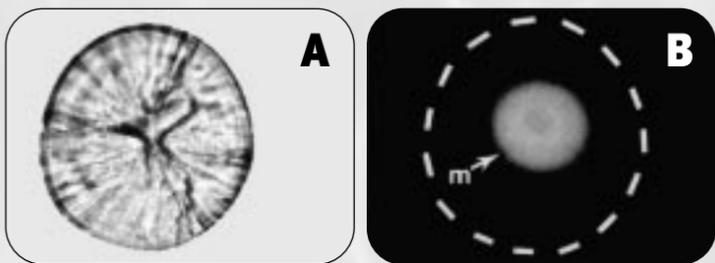
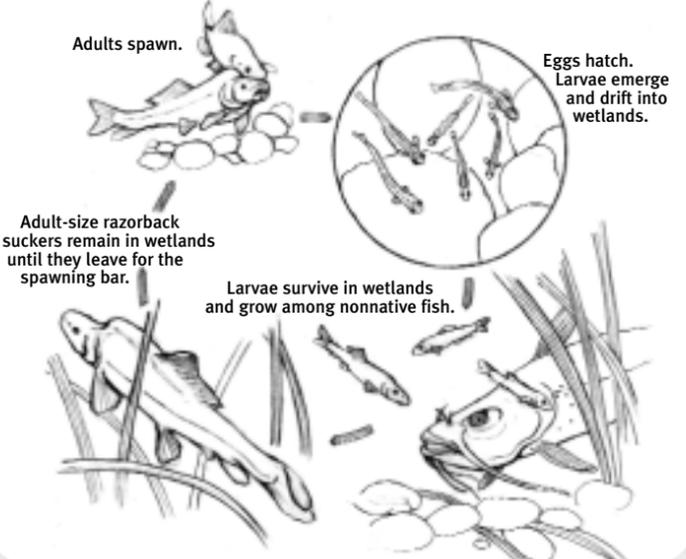
The U.S. Geological Survey also took advantage of the high flows to conduct a fourth study to determine the amount of sediment deposited on a razorback sucker spawning site and to give biologists a better understanding of flows needed to clean the spawning gravel prior to razorback sucker reproduction.

“Completion of these research studies clearly demonstrates the cooperation and commitment of Recovery Program partners,” Bob Muth said. “The information we gain will greatly contribute to our understanding of how habitat helps contribute to recovery of the razorback sucker. We will use the data to help plan and implement future actions that will help us achieve self-sustaining populations.”

For more information, contact Pat Nelson, 303-969-7322, ext. 226, pat_nelson@fws.gov. 🐟

Editor's note: See article on page 4 about smallmouth bass otolith research.

Razorback sucker life history



THESE ILLUSTRATIONS SHOW THE OTOLITH (INNER EAR BONE) OF A COLORADO PIKEMINNOW ABOUT 15 DAYS AFTER HATCHING. THE OTOLITH IS SMALLER THAN THE HEAD OF A STRAIGHT PIN AND IS SIMILAR TO THAT OF A RAZORBACK SUCKER. ILLUSTRATION A SHOWS THE BEGINNING STAGES OF DEVELOPMENT. AS THE OTOLITH GROWS, IT DEVELOPS CALCIUM LAYERS (OR RINGS) SIMILAR TO THE WAY A PEARL DEVELOPS. ILLUSTRATION B SHOWS THE OTOLITH UNDER ULTRAVIOLET LIGHT AFTER IT WAS MARKED (M) WITH TETRACYCLINE. THE DASHED LINES REPRESENT THE EDGES OF THE OTOLITH. THE MARK ENABLES RESEARCHERS TO DISTINGUISH STOCKED LARVAE FROM WILD LARVAE AND TO DETERMINE HOW FAR THEY TRAVELED FROM THE RELEASE SITE.



THE NATURE CONSERVANCY

Budding scientists

Heidi Mitzelfeld helps Hayden Valley Elementary School kindergartners log tag numbers from razorback suckers they raised in their classroom. The children released the fish into the Yampa River as part of the Colorado Division of Wildlife's classroom aquarium program. Heidi is an intern with The Nature Conservancy's Carpenter Ranch in northwest Colorado.



BONYTAIL

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Biologists honored for contributions to recovery

The Upper Colorado River Endangered Fish Recovery Program recognized biologists Bruce Haines and Tom Nesler last January with special awards for their significant contributions and dedication toward recovery of the endangered fish. Both men expressed surprise and honor for this recognition from their scientific peers.

Since retiring in 2001 after a 31-year career with the U.S. Fish and Wildlife Service (Service), Bruce continues to volunteer 15 to 20 hours per week with the Colorado River Fisheries Project in Vernal, Utah. While he still likes to collect samples of razorback sucker larvae in the Green River and its tributaries for studies, he said he leaves most of the field work to the younger staff.

“I spend a good part of my time mentoring the new biologists and helping them with data analysis,” he said. “When you’ve been a fisheries biologist for 35 years, it becomes part of your identity. I’m glad to have the opportunity to share what I’ve learned with the new staff. They seem so appreciative and keep me involved. They make me feel like I’m contributing.”

The younger biologists are fortunate to learn from Bruce whose Service career began in 1970 before the razorback sucker and bonytail were listed under the federal Endangered Species Act.

“Along with researcher Ed Wick and I, Bruce is one of the original ‘nighthawks,’ a group of biologists that started light trapping razorback sucker larvae in the Green River system in 1992,” said Recovery Program Director Bob Muth who presented the awards. “Bruce has worked with this river system so long, he has knowledge that cannot



BRUCE HAINES

be learned in books. We appreciate his willingness to share his sage wisdom with our staff.”

While Bruce was working in the Green River system, Tom Nesler was floating the waters of the Colorado and Yampa rivers in western Colorado. He, too, has extensive knowledge of these rivers gained during his 33-year career. Tom is currently the statewide manager for wildlife conservation for the Colorado Division of Wildlife, where he has held a variety of research and management positions since 1976.

Tom said he’s always been attracted to “big rivers” and endangered fishes. “As a young student in fishery biology, I was fascinated by the unique nature of these fish — the living dinosaurs of the river,” he said. His career has held his interest through more than three decades.

“Working with endangered species is like a treasure hunt. We’re always finding new information and understandings about the fish and their habitat,” he said.

As a leading researcher and active participant with Recovery Program projects and committees, Tom plays an important role in helping to make decisions about the



RECOVERY PROGRAM DIRECTOR BOB MUTH (LEFT) CONGRATULATES TOM NESLER.

management actions needed to recover the fish.

“Tom has been involved with all aspects of the Recovery Program,” Bob said. “He’s a researcher, a manager and a representative of the state of Colorado on our committees. Tom has supported the program through good times and bad and has helped solve many difficult issues that have enabled us to keep moving forward toward recovery of the fishes.”

Tom said the Recovery Program has helped sensitize people to wildlife management issues that are broader than just hunting and fishing.

“Some of the things about the system that attract fishermen include the natural wildlife community that is out there,” he said. “Colorado pikeminnow, roundtail chub and bluehead sucker are all part of that too.”

“I feel fortunate to be involved with the Recovery Program for so long and I am optimistic that at some point we will meet the goals for downlisting and delisting the fish. As we learn more about them, we’ve come to realize that they are more resilient than we ever thought.” 🐟

Dave Irving completes first year as project leader

Fisheries biologist Dave Irving brings enthusiasm and sound knowledge of fisheries and endangered species issues to his role as project leader of the Colorado River Fishery Project in Vernal, Utah. He also oversees the Ouray National Fish Hatchery.

Dave’s fisheries career spans 20 years and he has a lifelong love for the outdoors and aquatic resources. His father was a fisheries biologist with the Idaho Department of Fish and Game. While growing up, Dave and his brother camped, fished and tagged along with their father while he worked. As adults, both brothers have enjoyed careers as fisheries biologists.

Early in his career, Dave worked primarily with salmon and trout in Boise, Idaho, and King Salmon, Alaska. He came to Vernal in 1992.

“I was happy to have an opportunity to broaden my background by working with endangered fish,” he said. “I’ve come to understand and appreciate how different these fish species and their habitats are.”

Before becoming project leader in October 2004, Dave worked for the Utah Fish and Wildlife Management Assistance Office in Vernal where he forged sound relationships with members of the Ute Indian Tribe of the Uintah and Ouray Indian Reservation.

“I enjoyed working with the Tribe to help them manage their resources. I provided hands-on training for young tribal members who want to learn biology. In return, the Tribe worked with our staff to complete research studies and conduct other Recovery Program management actions to help recover the endangered fishes in rivers that flow through tribal lands.”

As project leader, Dave’s career has shifted from conducting hands-on field work to managing a staff of 12. Instead of spending days on the river



DEBBIE FELNER, RECOVERY PROGRAM

DAVE IRVING WAS HONORED BY THE UTE INDIAN TRIBE FOR HELP HE PROVIDED WITH ESTABLISHING AN ELDERS POND ON TRIBAL LANDS.

handling fish, he works indoors setting schedules for field crews, juggling budgets, promoting the program to community leaders and the public and handling a variety of issues that arise each day.

“While I sometimes miss being outdoors working on the river, I enjoy the challenges of leading this project,” Dave said. “Our staff is our most important resource and I want to handle all of the behind-the-scenes details that will enable them to go out and do their jobs. I also want to make sure they feel appreciated and get the training they need to achieve our common goal which is to work with our partners to do good things for the endangered fish and their habitat.”

Dave has a bachelor’s degree in wildlife science from Utah State University in Logan and a master’s degree in fisheries resources from the University of Idaho in Moscow. He can be reached at 435-789-4078, ext. 17, dave_irving@fws.gov. 🐟

Researchers study ear bones to learn origin and movement patterns of sunfish

—by Patrick J. Martinez, Aquatic Researcher, Colorado Division of Wildlife, Grand Junction; and Brett M. Johnson, Professor, Fishery Biology, Colorado State University, Fort Collins

Management of nonnative fishes continues to be one of the biggest challenges to recovering endangered fishes in the Upper Colorado River Basin. One group of nonnative fish of interest is the sunfishes, including largemouth bass, green sunfish, bluegill and black crappie. These species tend to concentrate in the backwater and floodplain habitats which serve as nursery habitats for native fishes, including the endangered Colorado pikeminnow and razorback sucker.

Most of these sunfish species are top predators in backwaters that the young of endangered and other native fishes rely upon to provide warmer water temperatures, shelter from the current and food to help them survive. A key question, particularly in the Colorado River near Grand Junction, Colorado, is whether most of these sunfish originate from the numerous adjacent ponds within the floodplain, or from within the river itself.

Another sunfish species, the smallmouth bass, is a relative newcomer to the nonnative fish community in the Upper Colorado River Basin. Although this species may also occupy backwaters, its greatest numbers occur in main channel habitats where its diet includes native fish.

Smallmouth bass numbers and range have increased dramatically, espe-

cially during the recent years of drought, raising concern that this species may contribute to the severe reduction of small-bodied and juvenile native fish in the Colorado River. The Upper Colorado River Endangered Fish Recovery Program is working to reduce the numbers of smallmouth bass and to limit their expansion in the basin.

Understanding where sunfishes in the Colorado River come from will help determine the most cost-effective and efficient methods to manage these species. For example, if study results indicate that most of the sunfish in the river came from specific floodplain ponds or a particular reservoir, then perhaps the waters could be screened to prevent continued escapement.

Colorado Division of Wildlife (CDOW) and Colorado State University (CSU) researchers are working with the Recovery Program to identify sources of sunfishes entering the Colorado River. A similar study is being conducted on the Yampa River to determine the origins of northern pike. Using fish provided by U.S. Fish and Wildlife Service biologists, the researchers are studying otoliths (fish ear bones) as a "biological CD" that records the unique, microchemical makeup of the water in pond versus river habitats.

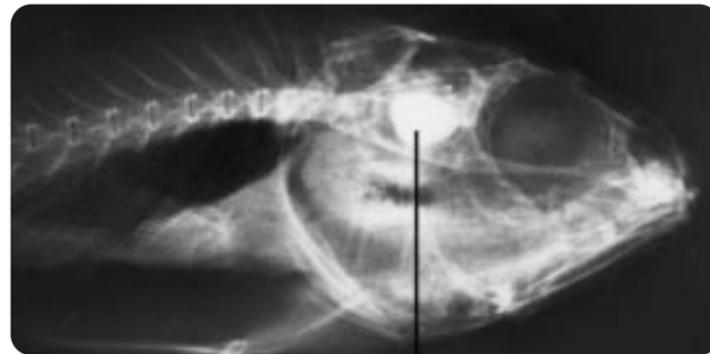
Otoliths grow incrementally as the fish itself grows, laying down layers like tree rings. The chemical composition of each ring tells something about the chemistry of the water the fish inhabited at a specific time in its life. Thus, otoliths provide a chemical timeline to trace the

travels of a fish between waters with different chemical signatures.

If otolith microchemistry proves successful, it will have other practical applications. For example, movements of fish from hatcheries into ponds or streams via stocking might also be traced by this same technology. Preliminary research by CDOW and CSU at state and federal hatcheries showed that the water chemistry of hatcheries are distinctly different due to the diverse geology in Colorado that exposes aquifers and other water sources for these hatcheries to highly varied rock layers below and above ground. CDOW and CSU are also conducting research to determine if reservoirs — including those in the same drainage — may possess unique chemical properties and whether these unique "signatures" would be imparted to fish that inhabit them.

Establishing a technique to identify "fingerprint" signatures of water sources in otoliths would serve as a potent deterrent and powerful tool for investigators and prosecutors to combat illicit stocking of diseased trout to protect wild and native trout populations. Such a technique may also help discourage the illegal transplanting of problematic nonnative fishes into reservoirs which now occurs frequently in western Colorado.

While work on these various projects is ongoing, efforts are underway to publish findings in scientific journals so that the research undergoes rigorous peer-review by impartial experts. This scrutiny will strengthen and guide



A SIDE VIEW OF THE OTOLITH (EAR BONE) OF A SMALLMOUTH BASS. THE OTOLITH IS LOCATED DIRECTLY BEHIND THE BRAIN OF BONY FISHES.



THE OTOLITH OF A 14-YEAR-OLD SMALLMOUTH BASS, AS VIEWED THROUGH A MICROSCOPE, SHOWS LAYERS LIKE TREE RINGS THAT TELL SOMETHING ABOUT THE CHEMISTRY OF WATER THE FISH INHABITED AT A SPECIFIC TIME IN ITS LIFE.

DR. STACEY BANDALL
USED WITH PERMISSION OF
GULF STATES MARINE FISHERIES COMMISSION

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research efforts to help develop sound tools that can contribute to the management and protection of Colorado's aquatic resources. This research is the first known attempt to apply these methods for the purpose of identifying sources of nonnative fish, or in a forensic fashion, to track origins of illicitly stocked fishes. ◀

Editor's note: Results of the smallmouth bass otolith study are expected in spring 2006. The Recovery Program will use the data to determine management actions needed to help recover the endangered fishes. For more information, contact Pat Martinez, 970-255-6141, pat.martinez@state.co.us.

Recovery Program news and updates



DEBBIE FELKER, RECOVERY PROGRAM

Nonnative fish management continues

The Recovery Program completed its third year of efforts to manage northern pike and smallmouth bass in certain river reaches where scientific evidence shows that these nonnative fish species threaten the survival of the endangered fishes.

Biologists worked in 565 miles of the Colorado, Yampa, Green and Duchesne rivers in the states of Colorado and Utah. Depending on the river reach, they targeted smallmouth bass and/or northern pike for removal. In Colorado, most fish were relocated to area fishing ponds.

Data are being compiled for review at a workshop in December where decisions will be made about future actions. For more information, contact Pat Nelson, 303-969-7322, ext. 226, pat_nelson@fws.gov. ◀



CAMERON WOLFORD, COLORADO STATE UNIVERSITY

New equipment improves capture efficiency

Researchers used new electric seines and boats this year to conduct nonnative fish management activities.

Biologists from Colorado State University's Larval Fish Laboratory introduced electric seines to cover wider, shallower areas and improve capture rates in the Yampa River.

U.S. Fish and Wildlife Service Biologist Mark Fuller had the idea to modify two, 14-foot cataraft boats to incorporate electrofishing equipment. His colleague, Dave Beers, turned the idea into reality by making the modifications. These boats enabled researchers to access shallow areas of the river and continue their work later in the season when river flows were low.

For more information, contact Pat Nelson, 303-969-7322, ext. 226, pat_nelson@fws.gov. ◀



U.S. BUREAU OF RECLAMATION

Proposed flows from Flaming Gorge Dam

The U.S. Fish and Wildlife Service issued a biological opinion in September that supports the U.S. Bureau of Reclamation's preferred alternative to modify operations of Wyoming's Flaming Gorge Dam. It finds that the proposed action supports endangered fish recovery through implementation of flow and temperature recommendations detailed in the Recovery Program's 2000 report.

This finding is part of the process of completing an environmental impact statement (EIS) for this project. The final EIS is slated for completion by year's end.

For information about the biological opinion, contact Larry Crist, 801-975-3330, ext. 126, larry_crist@fws.gov. For information about the EIS, contact Russ Findlay, 801-379-1084, rfindlay@uc.usbr.gov. ◀



UTAH DIVISION OF WILDLIFE RESOURCES

Research framework being developed

Each year, the Recovery Program evaluates the effectiveness of management actions taken to recover endangered fishes. Annual population estimates of Colorado pikeminnow and humpback chub for 2000-2003 showed an apparent decline in numbers of adults in some river reaches. Although past and ongoing actions address the most serious of known threats to these fish, causes for this apparent recent decline are not self-evident.

The Recovery Program, with assistance from The Nature Conservancy and other environmental interests, is developing a research framework that will provide flexibility to change actions to better achieve desired outcomes. It will be in place by spring 2006. For more information, contact Rich Valdez at 435-752-9606, valdezra@aol.com. ◀

swimming upstream



Upper Colorado River
Endangered Fish Recovery Program

Swimming Upstream is a publication of the Upper Colorado River Endangered Fish Recovery Program. The Recovery Program is a cooperative program involving federal and state agencies, environmental groups and water and power-user organizations in Colorado, Utah and Wyoming. Its purpose is to recover endangered fish while water development proceeds in accordance with federal and state laws and interstate compacts. The four endangered fish species are humpback chub, bonytail, Colorado pikeminnow and razorback sucker.

Robert T. Muth
Program Director

Debra B. Felker
Editor

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

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COLORADO PIKEMINNOW



HUMPBACK CHUB

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Program director's message

By Bob Muth

Wise management of available resources through collaboration by all parties with vested interests is the most prudent and effective way to achieve species recovery and long-term conservation. The Upper Colorado River Endangered Fish Recovery Program and San Juan River Basin Recovery Implementation Program have a multi-stakeholder structure in which federal and state agencies work with public and private entities. Stakeholders realize that recovery of the endangered fishes needs to be balanced with human needs. This approach to natural resource management is vital in today's society, and increases the number and scale of management options.

The goal of the Upper Colorado River and San Juan River Recovery Programs is to recover the endangered fishes in a manner that is consistent with federal, state and tribal laws. Both Recovery Programs operate under similar recovery elements with management actions that are consistent with the August 1, 2002, recovery goals for humpback chub, bonytail, Colorado pikeminnow and razorback sucker. Funding for capital construction projects and ongoing operation and maintenance is authorized in federal legislation through enactment of public laws 106-392 and 107-375. It is the responsibility of both Recovery Programs to work cost-effectively and to document and report measurable outcomes.

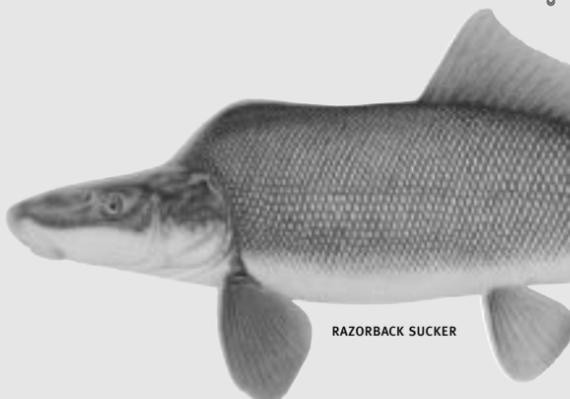
Sharing of information and exchange of ideas are critical to the continued success of these Recovery Programs. As we move forward to achieve our goal, both Recovery Programs are making a concerted effort to identify areas where we can work together. We will continue to share research findings and technical expertise in common pursuits such as nonnative fish management, endangered fish propagation and stocking, habitat restoration and population monitoring.

I am a firm believer in workshops and other similar venues that bring experts together to focus their attention on particular issues. Nonnative fish management, population monitoring and database management are some of the current hot topics. The Upper Colorado River Recovery Program will continue to host workshops in these areas. The annual Upper Colorado River Researchers Meeting provides an open forum for scientists and managers to present and discuss results of recent studies.

Communication and outreach are other areas that we are working to improve. This will help ensure that shared audiences receive accurate, consistent information about the endangered fish species and efforts to recover them. These audiences include the general public, elected officials, American Indian tribes, landowners, anglers, river rafters and guides, environmental organizations, water and power developers, teachers, students and Recovery Program participants.

This integrated approach has already been used during the past several years to produce an annual *Program Highlights* publication that reports current information on the progress both Recovery Programs are making toward recovery of the endangered fishes. You can contact my office for a hard copy of the most recent issue or view it at <http://www.r6.fws.gov/doc/dc/highlights2004/2005.pdf>. Hard copies of previous *Program Highlights* are also available.

Plans are underway to take this approach a few steps further. For example, future issues of *Swimming Upstream* would include articles, news and updates on both Recovery Programs. In anticipation of these upcoming changes, I am pleased to introduce Dave Campbell, the San Juan River Recovery Program's new coordinator, in this issue (see story at right). I welcome Dave and also Joann Perea-Richmann, San Juan River program assistant, as colleagues as we work together to recover the endangered fishes. ➤



RAZORBACK SUCKER

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Dave Campbell takes the helm of San Juan River Recovery Program

Dave Campbell's diverse background will come in handy as he takes the helm of the San Juan River Basin Recovery Implementation Program as its new program coordinator. Since assuming this role in January 2005, Dave has worked to further the San Juan River Program's goals which are similar to those of the Upper Colorado River Endangered Fish Recovery Program.

The San Juan River Program was established in 1992 to protect and recover Colorado pikeminnow and razorback sucker in the San Juan River Basin while water development proceeds in compliance with all applicable federal and state laws, including fulfillment of federal trust responsibilities to Native American tribes.

"Dave is truly an asset to the San Juan River Program and we are lucky to have someone of his caliber join our staff," said Joy Nicholopoulos, acting assistant regional director for ecological services, U.S. Fish and Wildlife Service, Southwest Region, and chair of the San Juan River Program's Coordination Committee. "Dave's energy and dedication have improved the program's coordination and management immensely. I really feel that Dave's vast knowledge and amazing background have made the difference in many of the program's undertakings."

Dave brings a broad range of experience to his new role. A native of West Virginia, Dave grew up around the world as one of six sons of a mili-

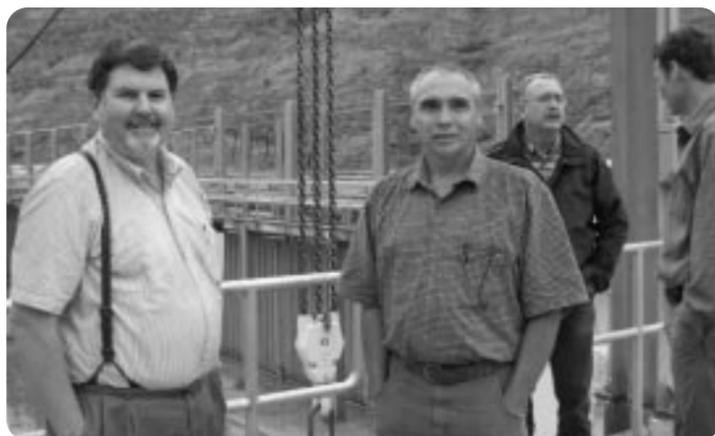
tary officer. After a four-year tour in the Navy, he spent 13 years in Alaska working on tugboats. He holds a bachelor's degree in environmental science and policy from The Evergreen State College in Washington. He earned a master's degree in science from The University of Vermont where he was one of four individuals awarded a Mellon Foundation Ecological Research Fellowship.

Dave was a Peace Corps volunteer in the Philippines. He was director of conservation programs for The Nature Conservancy in Tennessee and, most recently, he supervised the Endangered Species Act Compliance Team for Snohomish County government in the state of Washington.

Having lived in many places around the world, Dave is now settled in Albuquerque, N.M., where he is already enjoying the challenges of his new role.

"In several of my previous jobs, I had the opportunity to work closely with Fish and Wildlife Service biologists and I was very impressed by their commitment and professionalism," he said. "I am pleased to have the opportunity to work in the field of conservation with an agency that I have personally come to respect and want to be a part of."

Dave can be reached at 505-761-4745, david_campbell@fws.gov. For more information on the San Juan River Recovery Program, visit <http://southwest.fws.gov/sjrip>. ➤



ANGELA KANTOLA, RECOVERY PROGRAM

DAVE CAMPBELL (CENTER) TOURED THE NEW FISH SCREEN AT THE GRAND VALLEY PROJECT DIVERSION DAM ON THE COLORADO RIVER WITH UPPER COLORADO RIVER RECOVERY PROGRAM MANAGEMENT COMMITTEE MEMBERS INCLUDING TOM PITTS (LEFT) WHO REPRESENTS UPPER BASIN WATER USERS AND TOM ISEMAN (RIGHT) WHO REPRESENTS THE NATURE CONSERVANCY. U.S. FISH AND WILDLIFE SERVICE BIOLOGIST CHUCK MCADA (SECOND FROM RIGHT) WAS ON HAND TO HELP ANSWER QUESTIONS.

Cooperative agreement benefits people and fish in Yampa River Basin

The Upper Colorado River Endangered Fish Recovery Program (Recovery Program) signed a cooperative agreement in January that launched implementation of a management plan to help ensure that current and future water needs are met for people in the Yampa River Basin while promoting recovery of the endangered humpback chub, bonytail, Colorado pikeminnow and razorback sucker. The states of Colorado and Wyoming, the Colorado River Water Conservation District (River District) and the U.S. Fish and Wildlife Service (Service) also signed the agreement.

The Recovery Program developed the management plan after nearly a decade of close collaboration with the Yampa River Basin Partnership and other Yampa Valley residents. The plan addresses endangered species recovery and water development in the Yampa River Basin and its tributaries in Colorado and Wyoming. The plan reflects both current and projected water needs in the Yampa River Basin through the year 2045, and commits the cooperating parties and the Recovery Program to implement management actions to benefit endangered and other native fish species.

Located in northwest Colorado, the Yampa River is considered one of the most important tributaries in the Upper Colorado River Basin for recovery of the endangered fishes. This is primarily due to its relatively unaltered patterns of seasonal flows and habitat which are important to their life cycle.

"As the largest tributary to the Green River, the Yampa River is one of the crown jewels of the Upper Colorado River system," said Recovery Program Director Bob Muth. "In addition to directly providing habitat, it delivers flows and sediment downstream to the Green River, helping to maintain a river system with hundreds of miles of habitat considered vital to the recovery of the endangered fishes."

The plan is intended to offset the impacts of water depletions on endangered fishes. It identifies Recovery Program activities to augment base river flows, manage nonnative fish populations, evaluate the impacts of existing diversion structures, stock



ONE OF THE FIRST MANAGEMENT ACTIONS TO OCCUR UNDER THE COOPERATIVE AGREEMENT IS THE ENLARGEMENT OF ELKHEAD RESERVOIR IN NORTHWEST COLORADO. THE RECOVERY PROGRAM IS FUNDING 5,000 ACRE-FEET OF A 12,000 ACRE-FOOT ENLARGEMENT TO MAKE WATER AVAILABLE TO AUGMENT LATE-SUMMER FLOWS IN THE YAMPA RIVER TO BENEFIT THE ENDANGERED FISH. CONSTRUCTION IS SCHEDULED FOR COMPLETION IN 2007.

endangered fish and monitor habitat and fish populations.

"The state of Colorado will greatly benefit from this agreement," said Colorado Department of Natural Resources Executive Director Russell George. "It allows for the sound management of water resources in the Yampa River Basin to meet the needs of local citizens and supports river flow conditions for the endangered fishes. The plan's management actions will also benefit other native fish populations and help the state achieve its dual goals of conserving threatened and endangered species while providing for recreational fishing opportunities."

The Colorado River Water Conservation District helped develop the plan in accordance with Colorado water law and interstate compacts.

"The use of water for current and future economic development in the Yampa River Basin can coexist with the recovery of endangered species," said Colorado River Water Conservation District General Manager Eric Kuhn. "By cooperating with reasonable partners and implementing creative solutions, we're ensuring all species, including humans, have a more promising future in this region."

As a Recovery Program partner, the State of Wyoming's interest in the cooperative agreement stems from the

flow of water from Wyoming's Little Snake River into the Yampa River.

"As Wyoming's population and demands increase, we see tremendous benefits from the Endangered Species Act (ESA) compliance this plan provides," said Pat Tyrrell, Wyoming State Engineer. "This is consistent with Governor Freudenthal's emphasis on continued development of water resources to benefit all citizens of Wyoming."

The agreement will remain in effect as long as any of the four endangered fish species remains listed under the ESA. Prior to removing any fish species from ESA protection, conservation plans must be in place to ensure the long-term survival of the species.

"The Service is extremely appreciative of the cooperative relationships established with the states of Colorado and Wyoming, as well as residents of the Yampa River Basin," said Mountain-Prairie Regional Director Ralph Morgenweck, who also chairs the Recovery Program's Implementation Committee. "It is not easy to develop a multi-purpose plan like this, especially when it involves water. Implementation of this plan demonstrates the dedication of both states and their residents toward sound management of the Yampa River well into the future."

Fat Albert leaves Montrose Pavilion

Under the watchful eyes of five maintenance men, six endangered fish thrived in an aquarium at The Montrose Pavilion, a community gathering place in Montrose, Colo., where concerts and other special events attract more than 20,000 visitors each year. In fact, these men gave such careful attention to the razorback sucker, Colorado pikeminnow and bonytail that arrived from endangered species facilities in Alamosa and Grand Junction, Colo., the fish quadrupled in size in just two years and outgrew their home.

The men named the 16-inch razorback sucker "Fat Albert," because he was the largest fish. They called the bonytails "Mutt and Jeff," and the Colorado pikeminnows "Claw" and "Killer."

The 150-gallon aquarium was established at the request of Montrose Pavilion Director Mike Hepp.

"We had an empty aquarium in our lobby and Mike knew that there were ongoing efforts to recover these fish in the Colorado and Gunnison rivers," said Bruce Truckey, the Pavilion's chief of maintenance. "He thought it would be cool to have them on display in our facility. Our visitors show a lot of interest in them because they're very unusual-looking fish."

When the aquarium was established, nobody suspected that the fish would grow so quickly.

"Boy, they're fat," said Colorado Division of Wildlife Education Specialist Stan Johnson, who removed them. "You could tell these fish were well cared for and that the gentlemen who took care of them were a little upset that they were leaving." Stan and his colleagues measured, tagged and released the aquarium fish in quiet backwaters along the Colorado River near Grand Junction, Colo.

A few weeks later, pavilion staff welcomed the arrival of new endangered fish which continue to thrive thanks to the excellent care that the maintenance staff provide.

Editor's note: The Recovery Program is grateful to the many people who have made this exhibit possible including staff from The Montrose Pavilion, CDOW and the U.S. Fish and Wildlife Service. Biologist Steve Woodis from the U.S. Department of Agriculture's Natural Resources Conservation Service in Montrose has also made significant contributions to the ongoing success of this exhibit.



FIVE MAINTENANCE MEN PROVIDE DAILY CARE FOR ENDANGERED FISH ON EXHIBIT IN AN AQUARIUM AT THE MONTROSE PAVILION. PICTURED WITH CDOW EDUCATION SPECIALIST STAN JOHNSON (FAR LEFT) ARE (LEFT TO RIGHT): TERRY FARRIS, DARRICK ROBINSON AND BRUCE TRUCKEY. NOT PICTURED ARE KEITH FELLIN AND FRED ANDERSEN.



CDOW BIOLOGIST ANITA MARTINEZ SHOWS OFF "FAT ALBERT" A LARGE RAZORBACK SUCKER THAT BEGAN LIFE AT AN ENDANGERED FISH FACILITY AND GREW UP IN AN AQUARIUM AT THE MONTROSE PAVILION. TODAY, FAT ALBERT SWIMS IN THE MURKY WATERS OF THE COLORADO RIVER NEAR GRAND JUNCTION, COLO.

swimming upstream



Upper Colorado River Endangered Fish Recovery Program

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