Restoring flows and ecosystems on the San Juan

US Fish and Wildlife Service Bobby Duran holds a 30.3-inch, 9.1 pound endangered Colorado pikeminnow from San Juan River. Photo by San Juan Basin Recovery Implementation Program

Two decades ago, the San Juan River Basin Recovery Implementation Program was established to recover two endangered fish, the Colorado pikeminnow and razorback sucker, in the San Juan River and its tributaries in Colorado, New Mexico, and Utah. Today, a diverse group of partners is working toward that goal.

The program came about though a cooperative agreement signed by the governors of Colorado and New Mexico, the US Secretary of the Interior, the Southern Ute and Ute Mountain Ute tribes, and the Jicarilla Apache Nation. And it came as the result of a Reasonable and Prudent Alternative to an Endangered Species Act jeopardy opinion related to the development of the Animas-La Plata water project.

One of the Reasonable and Prudent Alternative's provisions includes the development of environmental flows for the river and guaranteed water for the fish. That's in addition to the development of a recovery program for the two endangered fish.

After the US Fish and Wildlife Service (FWS) issued its 1992 Biological Opinion, scientists spent seven years determining the needs of the fish. Then the program's biology committee developed a set of flow criteria, recommended flows, and a plan for how to re-operate Navajo dam to meet those flows for the fish.

They developed the recommendations by looking at the 150-year record of flows, pre- and post-dam, in the San Juan, then developed flow targets based on the frequency of different peak flows. The program's coordinator, the FWS's David Campbell, explains: "So, how frequently did we have a 10,000 cfs flow? How frequently do we need to have an 8,000 cfs flow? It's basically a probability of occurrence of frequencies, based on past history."

In 2005, the US Bureau of Reclamation (BOR) adopted those flow targets with a new Record of Decision for operating the dam.

Campbell also explains that since the river has been operating to mimic the natural hydrograph, FWS has been studying the effects of those flows on habitat, the Colorado pikeminnow, and the razorback sucker. Now, it's re-evaluating the flow recommendations to determine if changes are necessary. "That will occur in 2013 and 2014, so right now, we're going through that process of evaluating how effectively we've been achieving the goals we've set for each one of the flow targets," he says.

Two of the challenges scientists are facing include changing flows due to climate change and the onslaught of non-native vegetation—most notably Russian olive—in the basin.

The invasive tree armors banks and channelizes the river. It also chokes off side channels. Once established, even high flows can't move Russian olive out of the system. "Over the last ten years, we've been able to document a continued process of channel simplification that we now attribute more to the encroachment of Russian olive into the system than anything else," says Campbell. "We've got the high flows back, but they're just not capable of scouring out the vegetation."

In part to combat that nonnative vegetation, The Nature Conservancy (TNC), BOR, and FWS have been working since 2010 to restore channel complexity and improve habitat conditions for native fish in the San Juan River in New Mexico.

In 2009, the three partners received almost $400,000 in River Ecosystem Restoration Initiative, or RERI, funding from New Mexico. (See related story on RERI in this issue.)

The restoration project's genesis came years ago, says Patrick McCarthy, TNC's New Mexico director of conservation programs. The river had been changed by the encroachment of nonnative vegetation, the flows out of Navajo dam, and the simplification of the channel. None of that was good news for native fish. People who cared about the river were compelled to take action.

"They saw that the flow recommendations for re-operation of Navajo Dam that began to be implemented in the early 2000s were having some of the desired effects, but they weren't doing as much as people had hoped with respect to moving the channel around, moving some of the sediment, and re-creating some of the flexibility that the river channel formerly had," says McCarthy. "It took Mark McKinstry [a biologist with BOR] and some other smart biologist, asking 'What are we going to do about this?'"

McCarthy explains that it took the leadership of many, many people, including Adrian Oglesby—who, at the time, was the Living Rivers Program Manager at TNC and a member of the recovery program's coordination committee—to pursue the restoration project and eventually, earn RERI funding from the state of New Mexico.

After that, McCarthy worked with a team of people—including McKinstry, Oglesby, Campbell, FWS's Jim Brooks, and Brian Westfall of Keller-Bliesner—to select restoration sites, then decide how best to try and restore the river channel in a way that would complement the recommended flows.

"On a big river like the San Juan, the idea is to figure out how to reinforce and complement the implementation of these environmental flows by actually giving the river help moving around and re-creating itself, and restoring some of the complexity and dynamism it formerly had," McCarthy says, adding that biologists can stock the river with fish, but recovery of the fish will only be successful when populations become self-sustaining. "If you give them enough places to spawn, enough places for their young to survive in the summer, that pushes the whole system over this threshold whereby these two fish become viable again."

Restoring the San Juan's channel and its native fish populations is a daunting project. The San Juan is a "working" river, after all. It's also suffered decades of abuse. "With a river like this, that's as important biologically and as important for people as it is—for water supplies, agriculture, hydropower—you've got to start somewhere, and that's the attitude that we're taking now at TNC," he says. "We could just continue working on relatively pristine headwater streams that represent the low-hanging fruit, but…we also have to restore and protect these big rivers, too."

He also emphasizes the importance of working with partners and working together toward the same goal.

"It's about getting beyond this point of everybody watching out for their own interests and defending them ferociously—and [having everyone] take collective leadership," he says. "I also have to recognize and appreciate the role of the local people who live on the land and use the water. We have to ask how to make this work for them, whether it's providing better access to the river so they can get drinking water or so they can go down on the river to recreate."

McCarthy also gives credit to leaders such as Campbell. "It wasn't always easy, it wasn't a smooth process getting the group up and running, but there were leaders that came in with a very positive attitude and emphasized this program is about making sure that all of our water uses can coexist with a healthy river, and with healthy fish populations," he says. "That's the prize at the end of the day."

Unlike other collaborative programs that are focused on avoiding jeopardy, the San Juan program is focused on recovering endangered fish—so they can be removed from protection under the Endangered Species Act. There are ten partners within the program, including states, federal agencies, and water users. Campbell points out that the ten partners have worked together well, particularly in recent years.

They've done that not despite their diversity, but perhaps because of it.

"Because (the partners) are very diverse and have their own vested interests, there is no one interest group that drives the boat, so to speak, in one direction," he says, adding that FWS leads the program—something that the partners requested. "We operate on a majority rules approach; it's not consensus, so no one party can block or stop anything just by not concurring. It's a majority vote so it brings people quickly to making decisions about what they need to do and what they aren't willing to do."

Since 2005, a shortage sharing agreement has been in place among all the parties; during dry times, the shortage is shared equitably so that one water user—including the river itself—doesn't bear the burden of drought. Every three years, the agreement is revisited and adjusted based on what scientists know about the system and what water managers expect over the horizon from a water delivery standpoint.

The program has evolved, and it hasn't always been easy, but the partners have come to trust one another more over time—and Campbell says, they all fully support recovery of the two fish. "It's not using the recovery program as a façade, they really do want to recover the fish," he says. "That's the easiest way to get the ESA burden off their backs, so they're very supportive."

For more information:
The San Juan River Basin Recovery Implementation Program's website:
http://www.fws.gov/southwest/sjrip/

To view a slideshow of images of the restoration project from The Nature Conservancy:
http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/newmexico/san-juan-river-restoration-slideshow.xml