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## Pair Studies Native Trout in An Effort To Restore Population

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Walking up the thickly vegetated and bouldery banks of Rio Hondo's South Fork, state fisheries biologist Kirk Patten and conservation officer Eric Frey carried the tools of their trade: A 30-pound electroshocker, a backpack full of fish population survey tools, sampling equipment, notebooks, nets and, perhaps most importantly, hope.

About 30 years have passed since the state Department of Game and Fish last surveyed this small mountain creek for the state fish, the native Rio Grande cutthroat trout.

Before their recent visit, the two were uncertain about what they might find.

The creek tumbles out of a cirque formed by Lake Fork Peak and Vallecito Mountain near the Wheeler Peak Wilderness in the Carson National Forest before joining with the main stem of the Rio Hondo, which spills clear and cold along N.M. 150.

Running more than four miles, the South Fork courses over a steep, bubbling gradient from its headwaters above 12,000 feet to about 8,400 feet at its confluence with the main stem.

In many ways, the creek is ideal cutthroat habitat; it's remote, the water is clear, the banks are densely vegetated and strewn with fallen logs for protection and holding spots, the stream bottom is pebbly and there are frequent deep pools for overwintering.

So when Patten recently set out to survey sections of the creek, he was hopeful he would find an intact population of the state's only native cutthroat— a population he could add to the short list that can be secured from an invasion of non-native trout.

"It is a tiny little population, hanging by a thread," he said the week before heading to the South Fork with Frey.

## Restoring population

Since about the late 1980s, the state has devoted a full-time staff fisheries biologist to work toward recovering and restoring the state fish to parts of its former range. Recent estimates based on surveys suggest the fish is now restricted to about 7 percent of its historic range, which includes much of northern New Mexico and southern Colorado.

One of 14 subspecies of cutthroat trout native to the Rocky Mountains, the Rio Grande variety— like many of its cousins, including Yellowstone, Colorado River, Greenback, Lahontan and West Slope cutthroats— are facing a vastly reduced range due to introduced non-native trout species, degraded water quality, water diversions and habitat impairments from grazing, energy production and other impacts.

"It has been eliminated from essentially the best habitats, the best rivers and streams," said Noah Greenwald, a conservation biologist with the Southwest Center for Biological Diversity.

In many ways, native trout serve as an indicator species of habitat and water quality. The Forest Service now surveys native trout for that reason.

In northern New Mexico, the indications are not good. About 60 percent of the state's northern streams and rivers fail stream water quality standards set to achieve healthy conditions for trout. That is, 115 of the 190 streams, or portions of them don't meet state standards, according to state Environment Department figures.

Still, the biggest threat to native cutthroat populations are non-native trout introduced across the West around the turn of the century. In fact, the Greenback, native to Colorado, is federally

protected. Every other species of cutthroat has been petitioned for protection, largely as a result of competition with non-natives.

The non-native invaders include European brown trout, which spawn in the fall, so the young of the year have a head start on the spring-spawning native fish and will prey upon the newly hatched cutthroats.

"I think the best argument for preserving the natives and not allowing invasions of non-natives is that the natives are adapted to the (local ecological) systems and continue to be adaptable, especially in a warming climate," said Warren Colyer, an aquatic biologist and Trout Unlimited's Utah-based field coordinator for native trout restoration.

Now, pure or nearly pure populations of Rio Grande cutthroat trout can only be found in the coldest, highest and smallest streams, where growth rates are slower, reproductive success more chancy and populations are cut off from one another.

"To find a native cutthroat in New Mexico or southern Colorado, you have to hike well up into the headwaters streams," said Santa Fe's Kevin Reilly, the chairman of Trout Unlimited's native trout working group. "That is not good for the fish."

Greenwald said that if one considers how much area cutthroat now occupy, rather than simply stream miles, the fish has probably been eliminated from 99 percent of its range.

In 1998, the Southwest Center for Biological Diversity petitioned the U.S. Fish and Wildlife Service to add the Rio Grande cutthroat to the federal list of threatened and endangered species. Fish and Wildlife determined the trout didn't require federal protection, and in the summer of 1999, the Center filed a complaint challenging that decision. Two years later, in the fall of 2001, Fish and Wildlife and the Center agreed to a settlement that required the federal agency to do a complete status review of the trout.

That review, finished in 2002, determined there are 13 populations of genetically pure Rio Grande cutthroat trout the federal agency felt are secure from non-native brown and rainbow trout invasions, and have enough individuals to be self-sustaining and are unlikely to die off due to catastrophic events, such as fire or severe drought.

Each of these populations, with at least 2,500 fish, are distinct and isolated from other populations, fragmenting the species distribution and cutting off the natural exchange of genetic information between populations, putting the species at risk of reduced fitness and hampering its adaptability over the long term.

"To find that there are only 13 core populations shows how fragile the status of the fish is," Reilly said.

Despite this seeming vulnerability, the Fish and Wildlife Service determined these populations are secure enough for the long term and should not be listed as threatened or endangered. The agency said the decision is also supported by the strong and active restoration efforts under way by New Mexico and Colorado.

"In our view, it is ludicrous," Greenwald said. "With those 13 populations, by no means should the species be considered recovered or even secure."

## Collecting fish

Wading up the South Fork of the Rio Hondo, Patten and Frey, nets in hand and the electroshocker sending 400 volts of electricity through the icy currents, gathered in their nets flopping fish.

Along a 100-meter section of stream, the two collected brown trout after brown trout. Of 60 fish netted after three passes with the electroshocker, only three were cutthroats.

To get a sufficient sample size for planned genetic tests, Patten and Frey had to collect another five cutthroats, so they waded farther upstream, shocking as they went.

"Brown, brown, brown," Frey said, as whitish bellies, lacking the telltale orange-reddish gill slash and underbody coloring of the cutthroat, floated by. It took several hundred yards of wading before five cutthroat were collected.

"It means we can't secure the population," Patten said.

## Adverse impact

The truth is few people, especially native trout proponents, want the Rio Grande cutthroat trout to be listed as a federally protected species. Listing could severely limit recreational revenue in northern New Mexico, close many of its streams to angling, put strict limits on grazing, water diversions and other land-use practices that impact trout habitat.

"It will have tremendous adverse economic impacts on northern New Mexico if it is listed," Trout Unlimited's Reilly said.

Trout Unlimited, New Mexico Trout, the Quivira Coalition and other conservation and ranching groups have worked together with the Forest Service and the Department of Game and Fish on a number of projects to restore trout habitat and prepare for eventual reintroduction.

Following the 2002 Rio Grande cutthroat trout management plan, Patten and the state Department of Game and Fish are also working on an aggressive schedule of surveying to better determine the fish's status and check on existing populations and creeks that have been restored with native cutthroats.

The restoration effort faced what many native trout proponents see as a major setback last year when the state Game and Fish Commission voted to block the use of a poison that targets gill-breathing animals. It is used to clear streams of non-native trout before reintroducing cutthroats.

New Mexico became the only state to ban the piscicide, called antimycin, despite the strong recommendations of several state and federal agencies against doing so over concerns it would impede trout restoration efforts and bring the trout closer to federal protection.

The commission, lead by chairman Guy Riordan, now requires the Department of Game and Fish to gain approval of antimycin's use on a case-by-case basis. Every application must also be separately approved by the Water Quality Control Commission.

In August, the game commission gave Department of Game and Fish staff approval to begin planning one of the largest and most complex Rio Grande cutthroat restoration efforts to date.

The goal is to reintroduce the fish to about 126 miles of streams and tributaries within the Costilla watershed in Carson National Forest's Valle Vidal.

To do so, fisheries biologists have to remove all the non-native fish, which experts say can only be effectively done using piscicides. Other methods, such as electroshocking and overfishing, leave fish behind.

If successful, restoring Rio Grande cutthroat trout to the Costilla watershed— a process that could take a decade or more— would create one of the most extensive interconnected populations of cutthroat trout in the state.