

# A Ghost Fishery Returns to Life

By Steve Brown



**This circa 1920 photograph** shows a lumber mill in the little town of Spruce. In its heyday, Spruce was the hub of logging activity on Cheat Mountain. Photo courtesy of the West Virginia and Regional History Center, WVU Libraries

**T**his is a story about a ghost town—the historic town of Spruce, high atop Cheat Mountain. It’s also the story of a ghost fishery—the fabulous brook trout fishery that once existed in the Upper Shavers Fork of the Cheat River. Finally, it’s a story of the role history played in the loss of that fishery, and that science is now playing in its successful restoration.

The dawn of the twentieth century brought historic changes to Cheat Mountain, one of the highest, coldest, and most remote places in West Virginia. The mountain’s dense red spruce forests attracted logging and paper companies, which, in 1904, built the town of Spruce. High on the Upper Shavers Fork, Spruce was home base for the Shay logging locomotives that hauled spruce logs from farther and farther downriver.

Twenty-four miles down the Shavers Fork from Spruce was another home base, the Cheat Mountain Club. Built on the only road that crossed the mountain, the club was a popular destination for anglers who knew that Shavers Fork offered some of the best brook trout fishing in the East.

In the early 1900s, the logging of Cheat Mountain was intense and swift. By 1936, most of the virgin spruce on the

mountain was gone. Spruce survived as a railroad town for another two decades, but by 1960, it, too, was gone. A lonely sign beside the railroad tracks proclaimed the former town’s whereabouts.

The mighty Shay locomotives, however, survived. They were sold to the state to establish Cass Scenic Railroad State Park at the southern foot of Cheat Mountain. The railroad tracks down Shavers Fork also survived and are still in use today, providing the only motorized access into much of the roadless upper river.

Sadly, the railroad and the massive logging operations that spawned it profoundly changed the Shavers Fork, degrading fish habitat, warming the water, and severing fish access to cool tributary streams. As a result of these changes, the once wild fishery was replaced by one that required stockings of hatchery-reared fish.

## **A Pioneering Research Project**

Then, in the second half of the twentieth century, another problem emerged for the river: acid rain and acid snow. This fallout from unregulated power plant emissions threatened the very survival of the Shavers Fork fishery. In the early 1990s, WVDNR biologists responded with a pioneering research project, the results of which informed their efforts



**An angler fishes for** native brook trout in a Shavers Fork tributary. WVDNR, along with several public and private partners, is working to bring trout back to this once wild fishery. WVDNR photo by Steve Brown

to neutralize stream acidity in the Shavers Fork. These efforts allowed the river's fishery to at least survive.

This success opened the door to a decade of research on the Shavers Fork funded by the WVDNR and others, making Shavers Fork one of the most studied rivers in the state. West Virginia University fisheries professor Dr. Todd Petty and his students began to focus on the dynamics of the fishery and the factors limiting its recovery. Ultimately, those factors were identified as (1) poor diversity of aquatic habitats, (2) the severing of important tributaries, and (3) major warming in an area where the river flows west to east.

Once the limiting factors were known, the WVDNR and its partners established priorities and sought funds for restoration. The first major funding came from a congressional earmark secured by former Congressman Alan Mollohan. Later, more funding was directed to Shavers Fork when the Tygart Valley Conservation District needed to mitigate the impacts of a newly constructed dam on nearby Elkwater Fork. Important funding also came from the Eastern Brook Trout Joint Venture, part of the National Fish Habitat Partnership, and from the state's In-Lieu Fee Mitigation Program.

From the very beginning, research scientist Paul Kinder at WVU's Natural Resource Analysis Center played a critical role in helping the WVDNR build the team of public and pri-

mate partners needed for a project of such size and complexity. The team ultimately included state and federal agencies, academia, nonprofit conservation groups, private businesses, and individual landowners.

The first restoration project implemented on the river was the WVDNR's fish passage project at Beaver Creek, the most important of the severed Shavers Fork tributaries and the most challenging to repair. At Beaver Creek, every piece of equipment, from drilling rigs to trackhoes to cement trucks, and every bit of material, from boulders to logs to railroad ties, had to be moved by rail 10 miles to the work site. Thankfully, the railroad workers were highly skilled and up to the task.

### **Rail Workers and Scientists Unite**

The first order of business for the rail workers at Beaver Creek was removing the track and the old culverts. Then, three new culverts were installed according to specifications developed by biologists and restoration specialists. The center culvert, which is 10 feet in diameter, was embedded to become the main channel of the stream as it passes beneath the tracks. The two outside culverts were designed to carry only high flows.

Next came some stream restoration work. Rail workers



◀ **The new center culvert** at Beaver Creek, an important Shavers Fork tributary, allows fish to move upstream to cooler water in the summer and spawning areas in the fall. WVDNR photo by Steve Brown

▼ **Log structures were installed** to form small step pools above a new, passage-friendly culvert on Lamothe Run. These improvements allow fish to move easily upstream to seasonally important headwaters. WVDNR photo by Steve Brown



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and restoration scientists built step pools above, inside, and below the new culverts. The pools were designed to be used by fish as they move upstream. Finally, the railroaders tackled the tough job of rebuilding the track.

The railroad workers called it a railroad project with a stream component. The stream restoration specialists called it a stream project with a railroad component. In the end, the two groups came together to restore fish passage to a key tributary for spawning and thermal refuge, a tributary that had long been severed from the Shavers Fork mainstem.

As the Beaver Creek project wrapped up, the Tygart Valley Conservation District began its mainstem mitigation project on a section of Shavers Fork that lies upstream of Beaver Creek. It included the warm, problem section that flows west to east. The goals of this project were to enhance aquatic habitat and reduce water temperatures. To do that, engineers from the Natural Resources Conservation Service (NRCS) developed a restoration plan for more than four and a half miles of the river.

Staging materials near Cheat Bridge, the project contractor, North State Environmental, transported all of the restoration equipment and materials by rail to the work area, more than 11 miles up the river. Over the next two field seasons, North State built an array of state-of-the-art restoration structures designed by NRCS engineers. The structures narrow and deepen the stream channel and help cool the water.

While the Tygart Valley Conservation District was busy working on the mainstem, the WVDNR and its partners began to focus on a tributary far upstream at Oats Run. There, the problem was a pair of long, passage-impaired culverts



under the track that connects Spruce to Cass Scenic Railroad State Park. Rather than remove the culverts, biologists planned to install a culvert liner with prefabricated baffles that would create step pools in the culvert. These pools could be easily navigated by fish moving upstream.

### Shays to the Rescue

The only problem was that the track down Shavers Fork was blocked by the mainstem work being done by the Tygart Valley Conservation District. Luckily, Cass Scenic Railroad State Park came to the rescue, offering to deliver the Oats Run culvert liner from the southern end of the mountain using one of its historic Shay locomotives.

Shay No. 5 has been in continuous service on Cheat Mountain since 1904, when the town of Spruce was first built. It seemed fitting the old Shay should help restore

the river it had helped degrade a century earlier. Working together to accomplish that was gratifying for both the biologists and the railroaders.

Once the Shay delivered the liner sections to Oats Run, workers inserted them into the culvert and grouted them into place. They then rerouted the stream back into the lined culvert. Restoration specialists then improved the downstream connection to the mainstem by building a small series of step pools.

With the Beaver Creek, mainstem mitigation, and Oats Run projects completed, the only priority that remained was to restore the connectivity of Lamothe Run. There, a hanging culvert completely blocked upstream passage of trout into this spawning tributary and thermal refuge. Once again, a Shay locomotive from Cass delivered a baffled culvert. This time, Shay No. 4 got a turn to help with the restoration effort. As with Shay No. 5, it was a memorable moment for everyone.

At the Lamothe Run site, the track was removed and excavated, as it had been at Beaver Creek. A baffled, stand-alone culvert was installed, rather than a liner. As at Beaver Creek, two high-flow culverts were installed, bracketing the center baffled one. Finally, a step pool complex was constructed at the optimal gradient to connect the culverts to the natural streambed above.

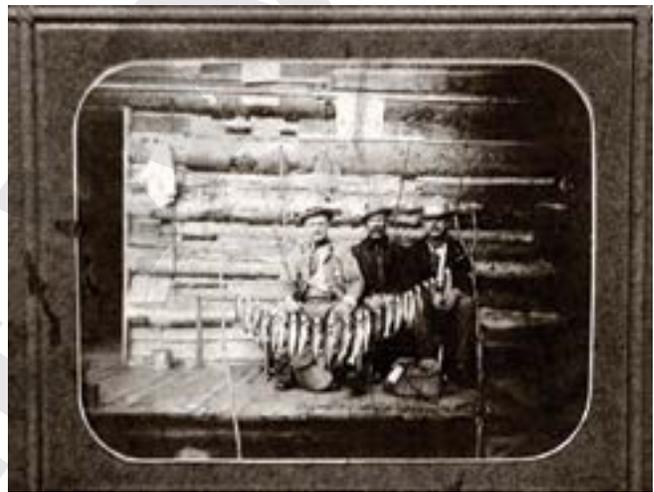
Now, after many years of planning and construction, a number of the original restoration priorities have been addressed. The WVDNR and WVU will continue monitoring and evaluating the results of these projects for years to come. And although it's too soon to declare the restoration a total

success, the early evidence suggests that there is reason for hope. The fish are responding and the fishermen are returning.

But the work isn't done yet. The WVDNR and its partners are developing new mainstem restoration priorities to help this historic fishery regain more of its former glory. As our efforts continue, we hope that the wild fishery on Shavers Fork will live once again.

*Note: Our iPad version features a video of railroaders and stream restoration specialists at work on the Shavers Fork. To subscribe, visit our website at [wonderfulwv.com](http://wonderfulwv.com) or call 800.225.5982.*

*Steve Brown manages the WVDNR's Stream Restoration Program. He continues to direct the agency's participation in all phases of the Shavers Fork restoration effort.*



(Right) **In this undated photograph**, early-twentieth-century anglers display their catches outside the Cheat Mountain Club lodge. The club was built in 1887 by the Cheat Mountain Sportsmen's Association as a private hunting and fishing retreat. The club still draws anglers and other outdoor lovers today. Photo courtesy of the Cheat Mountain Club

▼ **Cass Scenic Railroad State** Park's Shay No. 5 delivered culvert liners to improve fish passage at Oats Run near Spruce. WVDNR photo by John Rebinski

