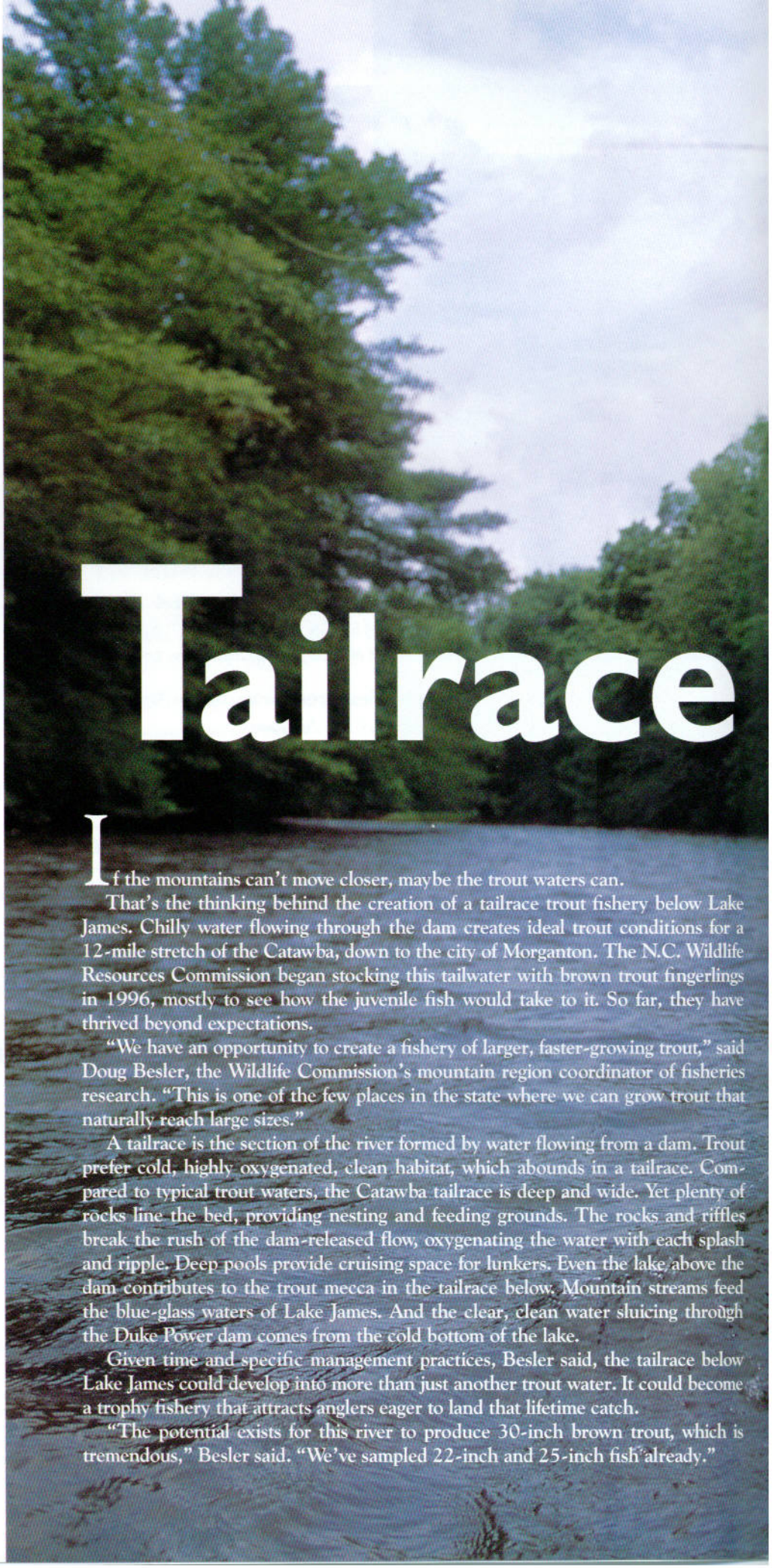
tale *of a* Tailrace

A new trophy fishery below Lake James is destined to be a trout-fishing treasure.

written by Brad Deen
photographed by Jody Duggins



If the mountains can't move closer, maybe the trout waters can.

That's the thinking behind the creation of a tailrace trout fishery below Lake James. Chilly water flowing through the dam creates ideal trout conditions for a 12-mile stretch of the Catawba, down to the city of Morganton. The N.C. Wildlife Resources Commission began stocking this tailwater with brown trout fingerlings in 1996, mostly to see how the juvenile fish would take to it. So far, they have thrived beyond expectations.

"We have an opportunity to create a fishery of larger, faster-growing trout," said Doug Besler, the Wildlife Commission's mountain region coordinator of fisheries research. "This is one of the few places in the state where we can grow trout that naturally reach large sizes."

A tailrace is the section of the river formed by water flowing from a dam. Trout prefer cold, highly oxygenated, clean habitat, which abounds in a tailrace. Compared to typical trout waters, the Catawba tailrace is deep and wide. Yet plenty of rocks line the bed, providing nesting and feeding grounds. The rocks and riffles break the rush of the dam-released flow, oxygenating the water with each splash and ripple. Deep pools provide cruising space for lunkers. Even the lake above the dam contributes to the trout mecca in the tailrace below. Mountain streams feed the blue-glass waters of Lake James. And the clear, clean water sluicing through the Duke Power dam comes from the cold bottom of the lake.

Given time and specific management practices, Besler said, the tailrace below Lake James could develop into more than just another trout water. It could become a trophy fishery that attracts anglers eager to land that lifetime catch.

"The potential exists for this river to produce 30-inch brown trout, which is tremendous," Besler said. "We've sampled 22-inch and 25-inch fish already."

Tailrace Trout

Among trout anglers, tailraces enjoy a reputation approximating Holy Grail status. But it's a resource North Carolina has lacked.

"Tailrace fisheries are known for their magnetism, if you will," said Squeak Smith, southeast regional vice president of Trout Unlimited. "They grow lots of fish—and good-sized fish. They're an awesome fishing opportunity."

Smith lives in Morganton. So when he wants to fish tailraces, he has to drive to Tennessee, where the Clinch, South Holston and Watauga rivers are interrupted by Tennessee Valley Authority dams. "It's sure going to be nice to have this 8 miles from my door," he said.

Interest from anglers like Smith is what compelled the Wildlife Commission to explore the viability of a trout fishery in the Catawba tailrace. By the mid-1990s, the commission had been stocking the river just below the dam for about 50 years. Those trout were adults, however, and were replenished each spring due to heavy angling pressure. The dam-fed waterway produced very little else in the way of a viable sportfishery.

"Surveys by our biologists and Duke Power showed very little out there," Besler said. The problem, he suspects, was a combination of hydrology and biology. The wide fluctuation of flows, a result of the dam's on-and-off schedule of hydroelectric generation, was not ideal for many native fish species. Besler expects much of the fluctuating-flow issue to resolve as Duke Power seeks federal relicensure of the dam.

Also affecting fish habitat in the tailrace was diminished water quality a mile below the dam, where the clean mountain water suddenly became dirty. Muddy Creek deposits an estimated 25,000 tons of sediment into the basin each year. Where the muddy waters meet the river, the channel runs striped—milky reddish brown in the western half of the river and sparkling clear on the east.

The periodic low flows and sudden dropoff in water quality prevented the development of a trout fishery in the tailrace. In 1994 the commission began stocking it with smallmouth bass, which are somewhat more tolerant of turbid waters. But the lake-fed water proved too cold and the rapid flows too fast for smallies.

"Smallmouth could survive and reproduce there," Besler said, "but it was not what they prefer. They were small. They weren't growing too well in the river. But the brown trout were doing well."

The trout were half-wild fingerlings, which the commission had begun releasing in the tailrace in 1996. A three-year study would assess the viability of brown trout fingerlings stocked at 23 spots along the 12-mile tailrace, from a half-mile below the dam to Morganton's drinking-water intake. The 2000 stocking consisted of 25,000 fingerlings, each tagged with a tiny magnetic wire in its left cheek. The 2001 class of fingerlings were tagged in the right cheek, and 2002 stock in the snout. When biologists sample the river each fall, they wave a handheld device over the fish's head. The detector beeps when it is directly over the tag.

What the biologists learned was surprising. In each year of the three-year study, the hatchery-spawned trout were larger than the wild trout in the same water. After their first summer in the river, hatchery-raised brown trout averaged 1 inch longer than wild browns—7 inches to just under 6 inches. And the size differential remained as fish aged.

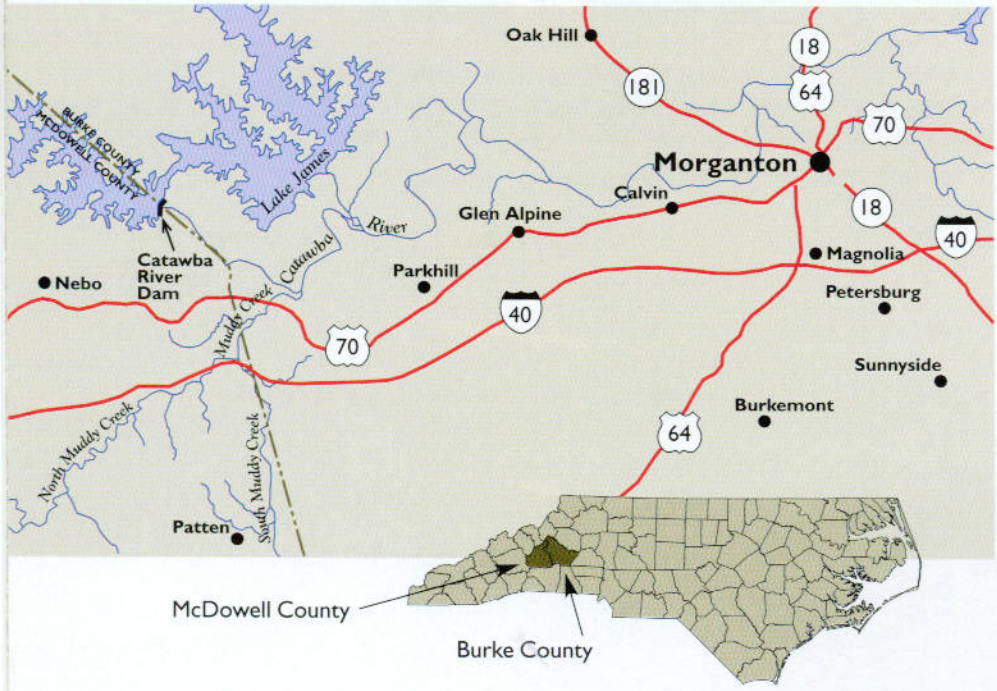
"It's a bit of a mystery," Besler said. "If I had to advance a theory, I'd say that the fish we're stocking are probably bigger than the wild fish at the same age—maybe a half-inch or so bigger. Either that's an advantage when going in, or they develop some advantage. And it appears the difference carries through."

The study also found that the tailrace produced fast-growing fish that increased in length about one-half inch per month during their first two years in the tailrace. Even under optimal conditions in a hatchery, trout grow only a little faster. Curiously, the sampling turned up no downwater dropoff in fish size, which would be a logical assumption as the effects of the dam diminished and the Catawba reverted to a natural river.

One possible reason for the consistent growth rates, Besler said, is the nutrient load originating in Muddy Creek. Bank erosion, agricultural runoff, land-disturbing developments and the town

***Muddy Creek** creates a striped pattern as it flows into the Catawba. Landowners and scientists are taking steps to reduce the creek's sediment load.*

Lake James and Tailrace



Biologists hope to enhance trout populations in the Catawba tailrace—the portion of the river just below the dam on Lake James. Work has also begun to clean up Muddy Creek, which leads into the Catawba River.

of Marion's sewage treatment plant all discharge into Muddy Creek. A trickle-up effect occurs, as more microscopic organisms and plants take advantage of the heightened nutrient-rich waters. That bumps up the number of insects and other small animals, which in turn leads to an increase in the number and size of fish.

"A typical mountain trout stream has very low natural productivity, so consequently, we see very slow growth rates and very few trout over 10 inches," Besler said. "The productivity of this tailrace is in an order of magnitude higher than you would see in a normal trout stream."

But the sediment that supercharges the tailrace biosphere also increases the turbidity of the water, making it increasingly unsuitable for trout. "Muddy Creek is a double-edged sword," Besler said.

De-Muddying Muddy Creek

The mud of Muddy Creek could hamper the developing fishery. As more and more of the floodplain winds up in the water, the sediment covers nesting and feeding areas on the river's bottom.

Agriculture is one culprit—a combination of cattle trampling the streambanks to reach water, and field runoff containing fertilizers and other pollutants. Construction in the 98-square-mile Muddy Creek watershed also sends hundreds of tons of red mud into the stream annually. A short canoe jaunt down the creek reveals dozens of spots where streambank erosion has created mini Grand Canyons towering 12 to 15 feet above the water's surface.

"There's just a tremendous sediment load, and it affects the whole watershed," said Bob Brown, an assistant district fish biologist for the Wildlife Commission. "We've spent the last five years working with a lot of different partners to see what we could do."

From Duke Power, which owns much of the Upper Catawba watershed, to Trout Unlimited, which has donated thousands of dollars and volunteer hours, assistance in cleaning Muddy Creek has come from the public, private and nonprofit sectors. An umbrella organization, Muddy Creek Partners, focuses many of these efforts.

"We've raised more than $1 million in the last five years," said Andy Brown, project coordinator for Muddy Creek Partners, "and three-fourths of that has gone toward on-the-ground restoration projects."

What stream restorers focus on are streambank stabilization and revegetation. "We work with landowners to keep their land from washing away," Brown said. "We've restored 6,500 feet of stream and surrounding banks. And exclusive of that, we've revegetated more than 1 mile of stream frontage. That's close to 20,000 feet of restoration, total."

Erosion-proofing methods vary by site. They range from fencing cattle out of the streams and drilling a well to water them, to excavating

***The Catawba Dam** tailrace could soon become a trophy trout fishery that attracts anglers from far and near.*

JEREMY GRADY

high-walled, erosion-prone banks with heavy machinery. At times, rock structures called "vanes" are the appropriate solution. These low rock walls have two purposes: They deflect water from particularly vulnerable banks, and, as the crevices fill with mud and silt, they form new, gently sloping streambanks.

Brown estimates the cleanup of Muddy Creek will take another 10 years or more. Landowner cooperation is key. "We've got to have them on board and participating to achieve an acceptable level of watershed protection," he said.

***Wildlife biologists** use an electrofishing rig to temporarily stun fish so they can measure them and document how much each hatchery year-class has grown.*

To sweeten their offer to landowners, the Muddy Creek Partners offer to remove invasive exotic plants, such as multiflora rose and Japanese knotweed, which have established themselves as tenacious weeds that thrive in disturbed streamsides.

"Doing this, and revegetating the floodplain area with attractive native plants, has a high aesthetic appeal. We want the landowners to see the value of maintaining a riparian forest buffer," Brown said.

'Green Dollars'

The value could be economic, as well.

Smith of Trout Unlimited said communities that boast tailrace fisheries "make millions and millions of dollars. If you build 'em, they will come."

A recent survey of tailrace anglers by the Tennessee Valley Authority found that each fisherman spent an average of $117 per day in pursuit of elusive tailrace trout. Multiply that by tens of thousands of anglers each year, and the economic impacts are considerable.

"The thing is, those are green dollars," Smith said. "You don't have to build infrastructure. You don't have to build new schools. I'm sure people in Charlotte, in Raleigh, would rather drive here than to Tennessee. People go there, or to Arkansas or out West and spend thousands of dollars for the same experience we're trying to provide right here in our backyard."

There are additional economic benefits to be reaped, said Brown of Muddy Creek Partners. Participation in land stabilization programs would make landowners in McDowell and Burke counties eligible for a share of $450,000 each year from federal and state farm programs. And the city of Morganton, he said, probably would not have to spend as much money filtering upstream sediment out of its drinking water.

That's all a little premature for the fish biologists, who have launched a follow-up study to determine the optimal stocking numbers and patterns to create a population of trophy-sized brown trout. Biologists also hope to have a set of proposed regulations for the tailrace available for review next year. Currently, the tailrace falls under the same regulations as other hatchery-supported trout streams across the state—an open season every month of the year except March, a daily creel of seven and no size or lure restrictions. Refer to the *2003–2004 North Carolina Inland Fishing, Hunting & Trapping Regulations Digest* for exact dates.

One thing is certain. When the commission makes rules for the tailrace, the primary consideration will be the local residents who enjoy fishing the Catawba just as it is. Creating a fishing opportunity for out-of-state trout anglers is secondary. "Our goal here is, primarily, to provide a brown trout resource," Besler said. "Our secondary goal [is to] produce a trophy trout resource."

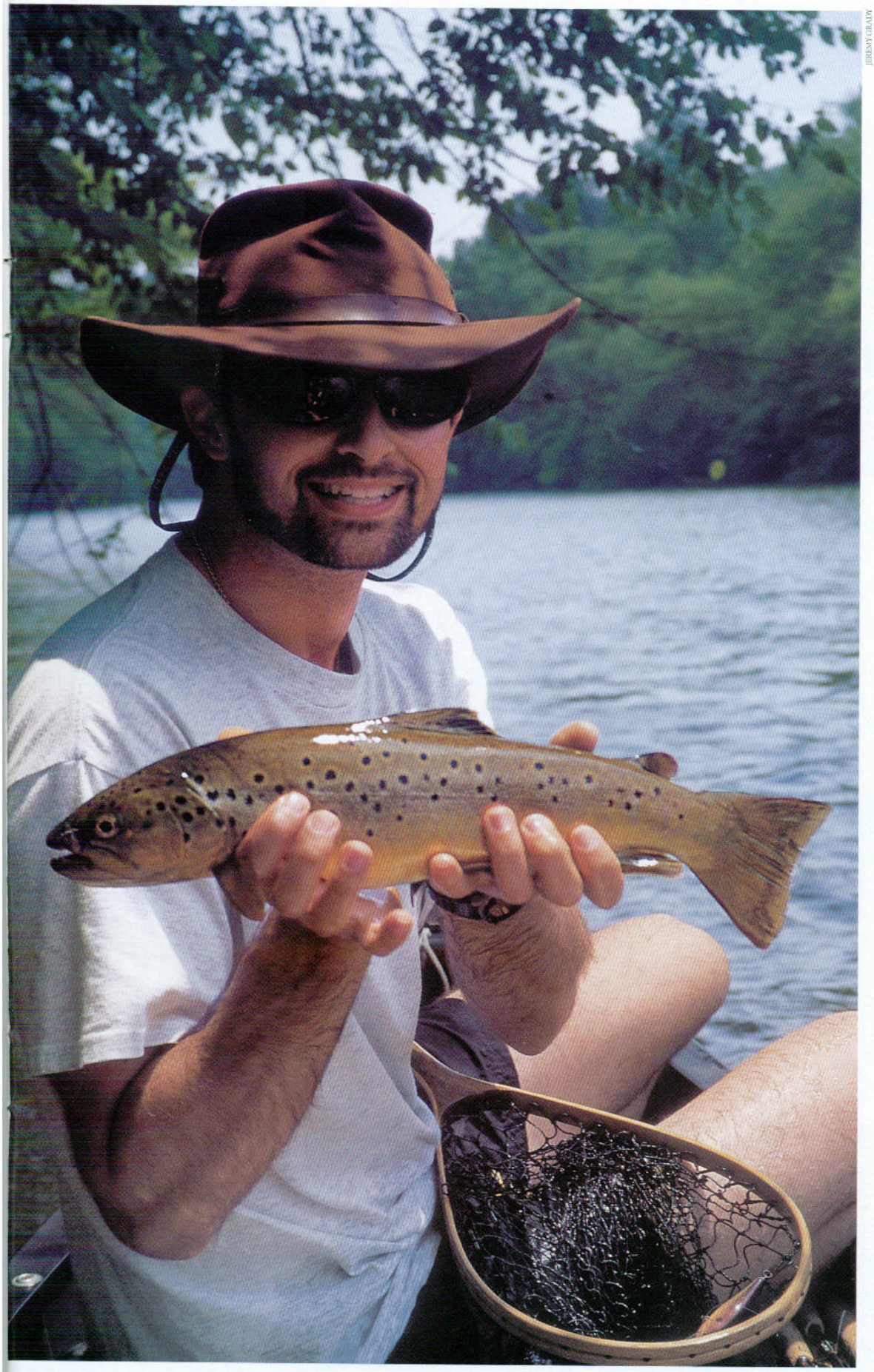
Toward that end, the commission is working with Duke Power during its dam relicensure effort to ensure that anglers—including anglers with disabilities—have improved access to streamside fishing in the tailrace.

Besler said the commission will continue stocking the tailrace with brown trout, at least for the foreseeable future. Recent sampling of the fish has turned up signs of some natural reproduction, but for now the rate is too slow to perpetuate the trout fishery.

"We don't have a goal of creating a natural fishery, a naturally reproducing resource. Under certain conditions, at some future date, maybe," he said. "If someone wants to fish in a natural trout stream, we have over 5,000 miles of them here in North Carolina."

But this one should be special—a jewel that anglers from North Carolina, neighboring states and even farther away will be thrilled to fish. Not that it will reach that level this year, or even the next. Five years or longer is the consensus timeline for pulling trophy trout out of the Catawba.

"It's coming," said Smith, "and it'll be great. But it's not there yet." ⊠



JEREMY GRADY

Five years or longer is the consensus timeline for pulling trophy trout out of the Catawba.

***Because the tailrace** has the potential to produce trout upwards of 25 inches, beauties like this one are only the beginning.*