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Andy Danylichuk casts into a roiling pool in search of wild brown trout. These trout were introduced to the river during the British colonial period but suffered near-decimation after a series of floods in the early 2010s. As a result of those floods, now-steep canyon walls supplanted what used to be small meadows and the valley is choked with boxcar-sized boulders, upended and tossed downriver by hydraulic force.

Photo: Brian Irwin

# PAHARI'S BROWNS

INDIA'S ASSI GANGA  
RIVER AND ITS  
MISSING TROUT

*Words: Brian Irwin*





ON AUGUST 2, 2012, the Assi Ganga River flowed peacefully from its source, Dodital Lake, seated at the head of a valley in the Indian Himalayan foothills. Trout swirled in its eddies, sipping stoneflies from the surface, growing plump like they had been doing since British eccentric Pahari Wilson introduced them to Dodital in 1862. It is a sacred lake and valley, with its source at the Chorabari glacier.

Within 24 hours the valley would be unrecognizable, and the trout in the river gone.

A six-hour cloudburst high in the watershed the next day led to a cataclysmic flood, ravaging the river and totally restructuring it. Boulders as large as barns tumbled down the riverbed and gutted the stream. The trout didn't stand a chance. To make matters worse, one year later a multi-day rain event dumped a catastrophic amount of precipitation on the region and the encompassing state of Uttarakhand.

The destruction of the river is a complicated story, but one that is rooted in a frightening pattern of extreme weather due to climate change that is striking the region, according to researchers from Utah State University. While data about the 2012 event is lacking, rainfall during the four-day June 2013 cloudburst was estimated to be 375 percent greater than normal, according to *India News*. The glacier melted, lakes exploded, and it all rushed downstream leaving havoc in its wake. Entire villages were erased; the death toll ran into the thousands; and bodies were found 100 miles downstream for six months after. Two-hundred migrant workers who were erecting a dam drowned. Rising floodwaters tore villages and temples to tatters; children were swept out of the arms of their parents.

DURING MY EXPEDITION into the headwaters of Dodital Lake in April 2019 my kit was often carried by Oopi. Oopi is the 20-year-old son of Bajinder, "lead man" of the Panchayat, or "community of five." As the leaders of the village of Agora, the Panchayat

strive for long-term protection of the village and its denizens. I was traveling with my friend and colleague, Andy Danylchuk, a fish biologist at the University of Massachusetts Amherst. Our goal: to find out if trout had returned to the Assi Ganga from Dodital Lake. We didn't make it to Dodital, as the typically passable thoroughfare was blocked by six feet of late-season snow—an anomaly, but one Bajinder and the residents of Agora are finding to be increasingly common.

The Assi Ganga is a sacred river, and one of the high headwaters of the Ganges. Dodital is believed to be the birthplace of Ganesh, the elephant god. Hindu lore has it that not only was he born there, but he was also decapitated there by his father, Shiva, who believed Ganesh was spying on his mother bathing naked in Dodital. Ganesh's mother became irate, and subsequently an elephant was chosen to donate its head to Ganesh. Today, the trek to Dodital is considered a spiritual pilgrimage.

Pahari Wilson was a British military deserter who defected during the British colonization of India and settled in Harsil, near the modern hamlet of Uttarkashi. Born Frederick, he traded his birth name for Pahari, which means "of the mountains." He integrated himself with the Indians, issued his own currency to them and became a raj, effectively a local British ruler.

But Wilson was a Brit, and an angler, and as British anglers often did at that time, he brought European brown trout with him to India and introduced them to Dodital Lake. Over the next century the trout migrated into the watershed, but were largely overlooked until about 20 years ago, when visiting foreign anglers started taking notice. An American by the name of Aaron Alter and his friends explored the valley and hatched a plan to develop a guided fishing program on the Assi Ganga, to be owned and operated by locals in the bucolic mountain village of Agora. But before Alter could complete his plan and hand the keys over to the locals—including Suman Panwar, a villager he befriended—the floods came, and the bottom fell out of the fishery.

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Bajinder and his wife spend summers in their "vacation home" a few miles up the valley, where they grow mustard and drink the milk of their water buffalo.  
Photo: Brian Irwin

The steep trail up the Assi Ganga valley to the village of Agora. "With the help of porters and mules, we managed long days of exploration up the valley's throat toward Lake Dodital, which Hindus believe is the birthplace of the god Ganesh."  
Photo: Brian Irwin

Hundreds of feet above the Assi Ganga River, the maze of footpaths and terraces of Agora accentuate the rugged terrain and barely begin to reflect the challenges faced by its inhabitants, especially with regard to climate change.  
Photo: Andy Danylchuk

A big Himalayan brown. Aaron Alter, an American angler and conservationist, displays a fish from Lake Dodital that was relocated to the Assi Ganga River as part of ongoing restocking efforts.  
Photo: Courtesy Aaron Alter

Barring the collapse of the mountains that surround it, Lake Dodital will serve as a natural sanctuary for Pahari's trout. The Assi Ganga restoration project aims to restock the valley with Dodital fish and create a sustainable future for these wild browns.  
Photo: Courtesy Aaron Alter



FROM OUR BASE IN AGORA, a seven-mile hike from the nearest road, Danylchuk and I rested after a day of flyfishing on the Assi Ganga. We fished hard, pouncing relentlessly from pool to pool of emerald water, 1,500 feet deep in a boulder-strewn canyon. We found no fish, and subsequently organized ourselves for a two-day micro-expedition up the valley to continue our search. Three young and sturdy porters—their combined age was likely 50 years—carried our kit happily; employment is hard to come by in Agora.

After two days of hiking up and down the canyon, over landslides and through idyllic water and lush forests populated by black-faced langur and macaque monkeys, we headed back to Agora. En route we passed Bajinder's summer house. Located two hours up valley from Agora, the home was simple—dirt floors, walls built from handmade bricks and the centerpiece of all homes in that region, an interior firepit. We shared the living room with two bulls and a cow and sipped chai tea, as we did in every home that welcomed us. Bajinder spends all summer here with his wife, tending to his fields of mustard and kidney beans before retreating to Agora in the fall.

He spoke, through a translator, about what he's seen in his decades spent in the Assi Ganga valley.

"The winters are longer, harsher," he lamented. He said he didn't recall a year that passage to Dodital was thwarted by snow so late in the season. "The monsoons—they are stronger. Spring [the growing season, pre-monsoon] starts later. Summers are shorter."

These disruptive trends, supported by scientific data, are palpable at the level of the villager who is affected by the changes each day. "Fall comes earlier than when I was young," he continued. "Hailstorms have killed our kidney bean crops. Just getting through the winter has become harder. We can run out of food."

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"A Britisher brought them up; some Indians brought them down. Suresh 'Rampalo' Panwar (left) and Birender Rawat transport fish from Lake Dodital to the Assi Ganga River. The fish carrier was our third design, a water tank placed on a platform normally used for carrying brides to weddings in the mountains of India, equipped with an aerator that runs on a motorcycle battery. We did partial and full water changes at five different locations on the longest transportation run—a total of 20 miles on foot from 10,000 feet down to 3,500 feet." Photo: Aaron Alter



WHILE THE RIVER is structurally different post-flood, it's still a viable fishery—one that could benefit locals like Bajinder. Danylchuk noted several key signs of a healthy river. Cold, seemingly clean water and abundant food sources were only some of the factors that give the Assi Ganga a fighting chance at becoming a great fishery once again.

“I couldn't believe the amount of food in that river,” Danylchuk exclaimed over a tin cup of hot chai after a day of fishing. “Under every rock there were stoneflies, other nymphs, teeming. All they need now is fish.”

That dream may be closer to reality than it seems. Alter still frequents the valley and Agora, often visiting Panwar. The two have been systematically relocating fish from Dodital to the lower Assi Ganga. They do this by hand, carrying 20-30 fish at a time in a homemade tank outfitted with beams for four porters. They hand-catch Wilson's legacy fish in the lake and keep them oxygenated with a car-battery-powered aerator while they move them down valley. After the 2013 flood, an impassible waterfall formed below Dodital Lake, making it difficult for fish to move safely on their own. They have resided in Dodital since their introduction and persist there today.

Granted, these fish are an invasive species. But so are brown trout in the United States, rainbow trout in the eastern U.S. and all trout in Patagonia. In the Assi Ganga the cat has been out of the bag for over 150 years and has settled into a non-destructive, harmonious existence in a non-endemic area. Trout are part of the new homeostasis of the ecosystem—one seeing the effects of climate change firsthand.

Danylchuk, an Indifly board member, was scouting the area to see if it might be a fit for the nonprofit organization, which strives to aid locals in using their piscatorial resources responsibly to generate revenue and help local economies. Indifly's mission, which has proven successful in places as varied as Guyana, French Polynesia and Wyoming, would have likely worked on the Assi Ganga, until that possibility was thwarted by the destruction of the fishery as a result of climate change. The brown trout still live in Dodital and will eventually colonize the lower river; if they recover sooner with the help of locals, the opportunity exists to build ecotourism and expedition angling as

an economy and subsequently protect the fishery and its ecosystem.

As for indigenous fish, there is no record of any. Whatever piscine life was in the river was altered 150 years ago by the introduction of brown trout, and today the river is nearly sterile save for the invertebrates that would be an abundant food source for a recovering fishery. Even Danylchuk, one of the United States' most respected fish biologists, said there was little harm in relocating the fish.

I asked him directly, “We have to assume there's harm to be done to introduce fish into a river, invasive ones. Correct?”

“It appears that there's little-to-no risk to the balance of the ecosystem to replace fish into the lower river,” he replied, “as they've been there before, and they still reside in the headwaters at Dodital. They've been there for decades. The harm may have been done 150 years ago, but that's in the past. Now the river is ready. Ready to embrace the fish that still live in rare pockets of water and will come back with or without us. The difference is the speed with which that recovery occurs. We can move the fish, responsibly, or wait 50 years for the same outcome to occur naturally. The only difference is a delay in utilization of this resource.”

Today, Panwar and Alter are planning new, more efficient ways to repopulate the Assi Ganga. PVC tubing, inflatable conduits and enhanced manual relocation are all being discussed. As for the 450 people of Agora, they are simply adapting the best they can and, in some instances, fighting for the survival of a way of life that has blessed this village for over 400 years. One thing seems certain: Trout or no trout, this village has not yet seen its greatest challenge.

The last night in Agora I couldn't sleep. I sat on the porch of a small home owned by a villager named Brenda who'd offered us a place to rest, served chai in the morning, and said not a word to me over a period of five days due to the language barrier. The stars of the Milky Way dusted a thin band across the sky as the Assi Ganga gurgled among boulder fields far below. I thought of the people of Agora, of Panwar, Oopi and Bajinder, and all that's changed in their lives. And as I considered their struggles, a shooting star ripped across the sky. I smiled. One thought came to mind: hope. ☾

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Suman Panwar (r) and Andy Danylchuk. Panwar has been an advocate of sustainable ecotourism to the valley, namely in the form of guided fishing expeditions. Today, he's an up-and-coming leader in the village, well-respected and well-spoken. Photo: Brian Irwin

“Oopi and his friends take a rest on our short expedition up the valley from Agora. At 14 and 15 years of age, they shouldered loads that would be impressive for fully grown adults. They carried packs, set up tents and made us noodles before and after we fished. We saw no fish, but we did see the tracks and hear the cries of snow leopards and monkeys well into the dark nights.” Photo: Brian Irwin

The scramble down the valley featured the echoes of tumbling water and visions of boulder gardens and crystal-clear pools, but only rare glimpses of what might have been brown trout that had eeked their way down from Lake Dodital. Photo: Andy Danylchuk