Forestry and Fisheries

Looking for clues to our logging legacy's influence on fish habitat in New Hampshire

By Andrew Schafermeyer

Through the eras that have shaped New Hampshire, few have had as great an impact on the landscape — and our sense of self — as our rich logging history. While measuring and studying coldwater fish habitat in northern New Hampshire's backcountry streams, relics of that history come to light, as I discover evidence of past and present lumbering operations.

It is not presumptuous to say that every river and stream in New Hampshire has been affected by timber harvesting practices. In fact, one can reasonably assume that all rivers and streams in Coos County have, at one time, been *driven* – the act of floating felled lumber downstream from the woods to the mill. As I step in and sometimes over these brooks, they seem unlikely candidates for such an operation.

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N.H. HISTORICAL SOCIETY PHOTO

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But back in the day, every spring, as ice receded and snowmelt crept in, these waterways became roaring collages of foam, water, wood and men.

The energy behind such a force was created by structures with names like *sluice dam, flash dam* or *run dam*. These dams were built in a variety of ways — but all served the common purpose of impeding flowing water to create a vast holding area for logs. Trees were marked for harvest; brought down by axes, crosscut saws and eventually chainsaws; and hauled by men, horse or tractor to these impoundments. When stream flow was just right and the job boss was satisfied with the harvest, these dams would be breached by men with iron bars, spiked boots and sometimes dynamite. In a climactic and often chaotic event, millions of gallons of water would rush downstream, carrying a bounty of timber to sawmills and processing stations as far as Massachusetts and Connecticut.

By the early 1960s, trains and trucks had replaced the need for dams and river drives, yet the craftsmanship of these early engineers can still be found. Two summers ago, while surveying a remote tributary to the Swift Diamond River, my three-member crew found a rotten, moss-covered dam with notched logs and 16-inch spikes still visible. Alone and half a mile from any road, we tried to imagine the activity and manpower that once occupied this quiet and almost lonely section of river. Below it was a deep pool filled with brook trout, and above it were tree species such as speckled alder that would be typical in a frequently flooded landscape.

While doing stream surveys, fisheries biologists discovered long iron spikes — relics of an old dam's cribbing.

ANDREW SCHAFERMEYER PHOTO

Without speaking, my crew and I walked around this piece of history, searching for further evidence of the early woodsmen who made a living here. We walked well into the surrounding woods and found spikes driven into hardwood stumps and root masses as far as 30 feet from the actual dam. Upstream, we found a choke chain as thick as a modern skidder tire chain. Downstream we found a pulp-hook, which, along with an axe or peavey, was a logger's most important tool.

N.H. HISTORICAL SOCIETY PHOTO

New Hampshire logger with saw, circa 1925. Trees were cut, sawed into 4-foot lengths and piled for seasoning.
Previous page: *Small stream driving harnessed waterpower to transport pulpwood to the paper mill. The Brown Company, Berlin, N.H.*

For the rest of the summer, our task of surveying the present included an exploration of the past. Where we normally looked for moose antlers and rising trout, we now sought out cantdogs, axes and calipers. "The holy grail for me is a pair of spiked boots," claimed team member Bryan Comeau, himself a logger since birth. Perhaps the most storied artifact of The Riverman, a pair of boots with one-eighth to quarter-inch spikes on the soles allowed for mobility and traction while moving around a slippery and unpredictable mass of moving logs. As a tribute to man and lifestyle, spiked boots were hung on a tree following a riverman's death — typically a drowning — and Bryan hoped to find a pair.

Imagining the Impacts

Once the field season is complete, I'm back at my desk, with a few fishing trips and memories of summer survey work to keep my mind calm through the long winter. I wonder, what effect did these old

logging operations have on fish and their habitat? During log driving episodes, the rapid and unexpected increase in flow and depth had immediate impacts on fish. Add to those conditions thousands of logs scouring the streambed, and you can imagine that fish — especially young and small ones — would face a difficult battle for survival.

As often as I imagine what the rivermen and their operation looked like, I also wonder what the stream must have looked like in the days after the drive had passed. As with any flooding event, the shape and course of log-driven streams must have changed dramatically with each operating season. Winding areas of varying habitat types were straightened and channelized; critical substrate and riparian cover diverted or destroyed; sedimentation would have been extensive. Impacts of the logging practices were not all negative in the long term — most rivers and streams have rejuvenated to provide a suitable home for aquatic life.

Nonetheless, forestry practices must be chosen carefully to minimize impacts on aquatic and riparian habitat now and in the future. The first and most severe impact that forestry can have on a watershed is temperature-related. The removal of forest cover can cause both a rise in water temperature and a decrease in water levels — both serious detriments to trout survival. In summer months, a healthy river system receives a continuous influx of cool water. When any section of river or its headwaters lose their basal area and thick forest floor, they lose their shade and ability to retain this moisture. Instead of acting as a giant sponge that stores and distributes water, a bare landscape can't absorb water or nutrients from rainfall and snow melt. The result can be flash floods, summer droughts and rising temperatures.

Another worry is a potential change in water quality or chemistry, one cause of which is the influx of sediment caused by road building and stream crossing. Siltation has the capacity to cover substrate, making it difficult or impossible for spawning fish to utilize. Fortunately, these practices are well-regulated, and violations that occur do not have long lasting results. And, since gasoline and diesel-powered trucks, skidders and chainsaws are closely regulated, they have minimal impacts on water quality.

The third potential logging impact — not much of a concern in New Hampshire these days — is morphological (related to a river or stream's structure). Their recovery from past log drives shows that rivers and streams are flexible and relatively resilient. Their ability to regain a healthy shape and flow can be amazing. With the progress of time and technology, waterways are no longer required as a direct tool of timber harvest. Today's strict guidelines governing the use of culverts, siltation devices and road construction ensure that a river's shape and course will remain largely unchanged.

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DIANNE EMERSON PHOTO

Left: Finding artifacts like this old saw blade inspired Andrew Schafermeyer to explore the connections between New Hampshire's logging history and its fisheries.

Above: The survey crew checks out the headway of a long-forgotten sluice or "flash dam" on a tributary to the Swift Diamond River.

Connecting with Tradition

I was once asked which historical figure, alive or dead, I'd most like to meet. Names like Jack London, Ben Franklin and Stan Musial bounced around in my mind, but only Albert Lewis "Jigger" Johnson emerged as my spoken response. Along with Johnson — a legendary New England logger and woodsman who died in 1935 — men like Dan Bosse and Jack Haley used courage and an indescribable work ethic to carve a place for themselves in New England logging history. Almost as unique as the operation itself were these men and others like them who kept it running. From camp bosses to scalers, from rivermen to sled-tenders, these men were most accurately described by writer Norman MacLean, who proclaimed them "as tough as their axe handles."

The history of logging and river driving operations is of great interest to me, and Bryan is still looking for that pair of spiked boots. As I try to understand and relate logging history to fisheries science, I catch a glimpse into an abandoned lifestyle. The old ways of cutting and moving wood have changed, and modern equipment has made it safer and easier. Impacts on aquatic habitat are better understood and well-regulated. Hopefully, the relationship between logging and rivers will remain positive and the integrity of both will prosper. WJ

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