Small town road project near Brownville makes big difference

Municipal collaboration, working with agencies and nonprofits, provided the expertise and additional funding needed for a better stream crossing.

By Catherine Schmitt

Brownville Junction is a rural crossroads where state highway Route 11 intersects with two rail lines connecting to Millinocket, Bangor, Quebec and New Brunswick. Trains clatter along while logging trucks rumble to and from the Golden Road. Hunters and fishermen access an extensive network of ATV trails and gravel roads. Hikers and campers seeking recreation and scenery pass through town on their way to Katahdin Iron Works and Gulf Hagas.

Just north of town, the West and East branches of the Pleasant River and several smaller streams come together, their channels winding in between and under rails, bridges and roads.

At one such intersection on Front Street, a stream flowed under the road through an old culvert made of two railroad tanker cars, the ends sawed off and framed in timber crib. Over the decades, the rusted cars, never welded together, became separated and crushed. Meanwhile, annual spring floods eroded the area around the culvert. Bigger floods even overtopped the road a few times, preventing residents from reaching their homes. By 2015, erosion had gotten worse, the culvert was perched inches above the stream bed, and the timbers were rotting away. The situation had become a problem for the town. But the cost of replacement – nearly half a million dollars – was prohibitive.

"It wouldn't have got done until it washed out," said Kevin Black, director of operations for the Town of Brownville. In addition to completely cutting off emergency services for the people who lived on the dead-end road, a flood would have swept away water and sewer lines, making for a public health and environmental disaster and an even more expensive repair.

Crew installs larger pipe and culvert. *(Submitted photo)*

Fortunately for Black, people outside of Brownville were also interested in fixing the Front Street culvert, because it was a problem for fish.

Whether made of pipes of corrugated metal or plastic, concrete boxes, stone arches, or hand-crafted versions like the railroad cars on Front Street, culverts can block the movement of fish and other aquatic wildlife. Across Maine, thousands of culverts have been identified as barriers for being too narrow, too short, placed at the wrong angle, or simply broken.

'Stream Smart' approach

The combined issues of flooding and wildlife harm have led a diverse group of state, federal, and local agencies and organizations to promote new "stream smart" culvert designs that provide natural stream flows. These culverts are better suited to handling flood waters, and they allow fish and wildlife to pass through on their way to and from feeding and breeding habitat. Up-front costs may be higher, but they typically last much, much longer than standard pipe culverts.

The Pleasant River that flows through Brownville is clear and cold and provides ideal habitat for wild Atlantic salmon and brook trout. For some time, conservation organizations have been working to restore habitat here by removing old log-driving dams and replacing undersized culverts.

After the National Oceanic and Atmospheric Administration (NOAA) designated the Penobscot River Watershed a "Habitat Focus Area" and Atlantic salmon a "Species in the Spotlight," more funds became available for addressing barriers to fish migration. Brownville's Kevin Black, who had overseen the installation of a fish-friendly design on Route 11, brought the Front Street culvert to the attention of NOAA and The Nature Conservancy.

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Understanding the importance of the habitat in these waters, NOAA and The Nature Conservancy agreed to provide significant funding for the project to augment the town's investment. Additional funds came from a state water bond approved by voters in 2014.

For two months in the summer of 2018, Tolman Construction of Mattawamkeag built a temporary road and bridge, diverted the stream channel and dug out the old culvert. They installed a corrugated steel arch on poured concrete footings, a design that provided more than twice the capacity of the old conduit, ensuring it won't wash out even in the most severe flood events. They installed two thousand cubic yards of gravel fill around the arch and anchored the ends with reinforced concrete footers. New water and sewer lines were laid along the straightened and regraded road. Black, who is also the water and sewer superintendent and fire chief, was on site every day. Ben Matthews of The Nature Conservancy spent much of his summer on-site, too.

Centuries-old problem

"We are allowing salmon and brook trout to access prime headwater spawning habitat, and fixing a 200-year old infrastructure problem," said Ben Matthews, project manager with The Nature Conservancy. "This project is a prime example of how fish-friendly culverts can increase flood resiliency and fish populations – part of TNC's mission to find solutions to benefit both people and nature."

"It would have been quite a challenge without Ben there. I'm a water and sewer engineer, that's what I know," said Black. "Ben knew how to put the culvert in and rebuild the stream bed."

Even after October rainstorms, the stream easily flowed through the new Brownville culvert.

"I'm very happy with it," said Black, who learned a lot about aquatic wildlife during the project. "It kind of opened my eyes. Every project we do now, I'll know more in terms of what fish need. I've seen it work. Turtles are using the walkways in the culvert. We laughed when Ben told us we had to make walkways for turtles, but just the other day we got a picture of a turtle in it."

"It was a huge project, nothing the town could have done by itself," said Brownville Town Manager Kathy White. "Now we have peace of mind that if flooding ever happens again, we should be fine."

Brownville is one of hundreds of towns across Maine dealing with old and failing infrastructure like culverts. Replacing and upgrading road-stream crossings has been a focus of multiple agencies and organizations for the last decade or so.

So how can communities get started replacing worn, dangerous and undersized culverts? The first step is to contact one of a number of organizations or agencies that are working to help make it easier and more affordable, including The Nature Conservancy in Maine, the Atlantic Salmon Federation, Maine Audubon, local land trusts, Maine Department of Environmental Protection, and Maine Department of Transportation. They'll help identify priority projects and guide municipalities toward a range of funding opportunities. ■

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