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## The Kennebec River: A Historic Maine Resource

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# The Kennebec River: A historic Maine resource

By Elise Begin

The Kennebec River has been considered one of Maine’s most important resources for at least the past 6-8 thousand years; its basin is located in west central Maine and drains 5,893 square miles, an area that is approximately one-fifth the area of the state.<sup>1,2</sup> The river originates at Moosehead lake and runs 170 miles to the Atlantic Ocean. The river can be divided into two basins: the upper basin, which spans from Moosehead Lake to Waterville; and the lower basin, which spans from Waterville to the ocean.<sup>3</sup>

Before the arrival of Europeans in 1606, the Abenaki Indians controlled the entirety of the long, twisting river. In fact, it is its twisting and turning nature that inspired the Abenaki to give it the name Kennebec, which means either “snakey monster” or “long quiet water.”<sup>2</sup> The Abenaki exploited many resources from the river, however they primarily depended on it for transportation and trade.

Like the Abenaki, when Europeans settled at Popham Colony on the mouth of the Kennebec, they depended on the river for trade. The Kennebec was an ideal location due to its size and central location.<sup>2</sup> Popham Colony dissipated in 1608, but the Kennebec River continued to be exploited, and still continues to be exploited, for its many resources.

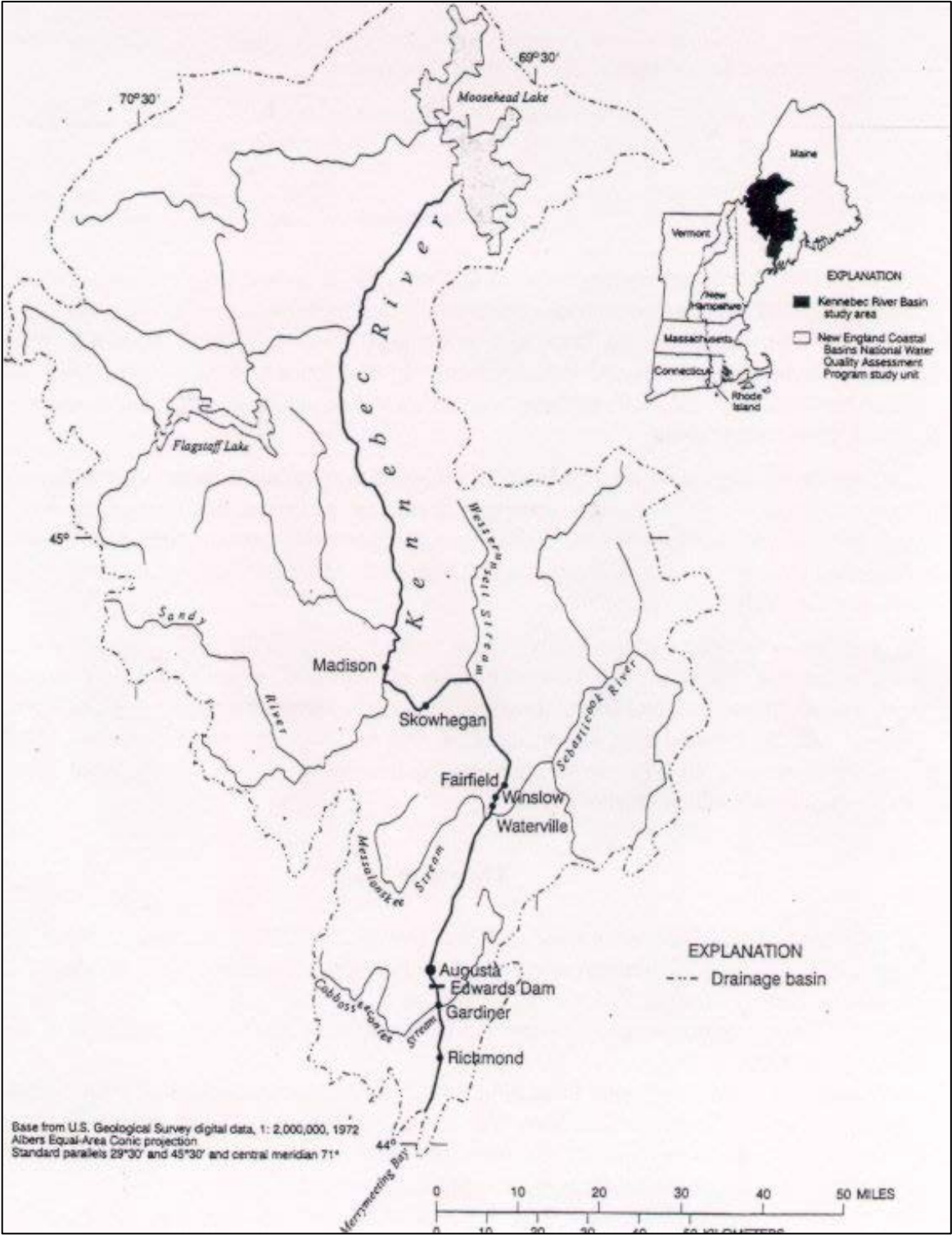
In addition to its importance for transportation and trade, the Kennebec River basin has also been exploited for many other resources. The Kennebec has historically supported a productive anadromous fish fishery, while the fertile land in the river basin has supported agriculture.<sup>3</sup> The roaring river has also provided water power for hundreds of years, and still provides power. Perhaps the most important resource the Kennebec River basin offers is logging. The river basin, which is 70% forested and contains both hard and soft-wood growth, has been harvested for centuries and continues to be harvested today.



**Kennebec Anglers.** Anglers enjoying the Kennebec River. Photo taken from Trout Unlimited (unknown) Kennebec Valley Chapter: Kennebec River, Maine. Online <tu.org> (Nov. 24, 2012).



**Harris Station.** Harris Station, one of the hydroelectric dams on the Kennebec River, located in The Forks, Me. Photo courtesy of Northern Outdoors.



**The Kennebec River Basin.** The Kennebec River and its surrounding watershed. The river can be separated into the upper basin, from its headwaters at Moosehead Lake to Waterville, and the lower basin, from Waterville to the Atlantic Ocean through Merrymeeting Bay. Photo courtesy of Colby College Libraries.



# A river of made of wood: Historic logging on the Kennebec River

Since before 1680, logging has been an important industry in Maine. It wasn't until after the revolution that logging on the Kennebec River saw rapid development. The Kennebec River basin offers an ideal environment for tree growth, and from the mid-1800s to 1976, the river also provided the waterpower to mill the wood as well as a means to transport the wood to the mills.<sup>3</sup> All of these factors allowed for the establishment of a productive lumbering industry from as far north as Jackman, to the mills in Winslow.

The river drive started as soon as the water flowed enough for the logs to move.<sup>4</sup> In the earliest days of the log drives down the Kennebec, tree length logs were transported down the river to the mills where they were processed. Trees were harvested mainly by small operations that acquired wood using saws and axes. The trees would then be transported using oxen or horses through the woods. If the tree was a softwood, it would be brought to the river, however if the tree was a hardwood, it would be transported by the oxen or horses to either the railroad, or directly to a mill.<sup>5</sup> This difference in transportation was due to the fact that hardwood was much more dense than softwood and would sink in the river.<sup>6</sup>

During the winter months, the softwood would be piled on the river banks, and in the spring, loggers would push the piles into the water.<sup>6</sup> The logs would travel down river and be tended by river drivers whose primary responsibility was to ensure that the logs kept moving and jams were broken up. The logs would soon reach the mills where another group of loggers hauled the logs out of the river and they were brought into the mill to be processed.



**Left: Logs on the Kennebec.** Log drivers and tree length logs on the Kennebec River. Unknown year, however it is prior to 1920. Photo courtesy of Colby College Special Collections. **Right: Hollingsworth and Whitney Boom.** Tree length logs being sequestered on the Hollingsworth and Whitney boom in 1906 after their trip down the Kennebec River. Photo reproduced from Sleeper, F.H. (1995) Around Waterville. *Images of America*, 43.



**Upper Left: Pulpwood awaiting shipment.** Four-foot logs piled on the banks of the river waiting for the spring thaw. Photo courtesy of Jackman Historical Society. **Lower Left: Cleaning up Kennebec River Banks, 1967.** Loggers cleaning up the banks of the river to recover stranded wood. Photo courtesy of Jackman Historical Society. **Right: Boom of logs on Moosehead Lake.** A boom of logs getting towed across Moosehead. Photo taken from Dietz, L. (1968) *Kennebec Log Drive* acquired from Jackman Historical Society. *Downeast Magazine*, unknown issue, 52-57.

Although there were, and still are some small operations in existence, beginning in the 1880's, large corporations began running the majority of logging operations.<sup>7</sup> These large corporations bought land in the Kennebec River basin, and along with the change in land ownership came a change in the way in which wood was transported. In the 1920s, logging companies stopped sending tree-length wood down the river and began sending four-foot pulpwood. This shorter wood made it possible for the large volume of lumber cut to float more efficiently down the river.

As the pulpwood made its way down river, it would run into natural lakes, as well as still water made by dams on the main river. In order to keep the pulpwood moving downstream, a large boom would be positioned around the wood and a boat would pull the wood from one end of the lake to the other.<sup>8</sup> When the boat reached the outlet of the lake or the dam, the boom would be removed and the logs would flow freely again. Throughout the process of transporting wood to the mills, very little wood was lost due to sinking. The majority of the wood that did sink was recovered by men with hooks that cleaned the streams every year and the edges of the lakes every two or three years.<sup>4</sup>

As time passed, new technology was developed for more effective harvesting of lumber. The rise of chainsaws increased the yield of wood cut, and tractors increased the efficiency of hauling cut wood to the river. Tractors also allowed for harvest sites to be located greater distances from the river, and bulldozers enabled loggers to dump piled wood from the banks to the river into the river itself more quickly. All of these advances in the logging industry resulted in the harvesting of thousands of cords. This massive volume of pulpwood filled the Kennebec to a point where, during the spring and summer months, you could hardly see any water, just a mass of floating logs.<sup>4</sup>



# Making way: The process of optimizing the Kennebec River for log drives

Although the Kennebec River provided a natural waterway that aided in the transportation of logs down river, the natural flow of water was not efficient enough to drive the thousands of cords of wood to the mills down stream. In order to optimize the Kennebec as a logging highway, log driving companies modified the river basin in various ways using several techniques.

One of the most common river modifications was the construction of dams. There were as many as ten dams located on the upper Kennebec River.<sup>3</sup> In addition to those on the main river, logging companies constructed sluice dams in order to increase the efficiency of the river and its tributaries for log drives. Sluice dams were specialized dams that held back headwater using a gated channel. The sluice was a water channel controlled by a gate, these would be closed in the winter and logs would accumulate upstream of the dam.<sup>9</sup> When the sluice way was opened in the spring, headwater along with the logs that were stored above the dam would flow down river towards the mills. The control of river flow in this manner allowed for a strong enough headwater to drive the logs on demand, thus it was possible to drive logs for a longer period of time, rather than just during the spring floods.<sup>10</sup>



**Weston Station Dam.** The pulpwood sluice at Weston Station Dam on the Kennebec in Skowhegan. Photo taken from Eastern Illustrating Inc. (unknown) Pulp Wood Sluice at Weston Station Dam. Online <cardcow.com> (Nov. 27, 2012).



**Flagstaff Lake Dam.** Four-foot logs flowing through the sluice gates at the Flagstaff Lake Dam near the headwaters of the Dead River. Photo taken from Dietz, L. (1968) Kennebec Log Drive acquired from Jackman Historical Society. Downeast Magazine, unknown issue, 52-57.



**Brown Company Log Driver.** Log driver on a driving boom from Brown Company in Berlin, New Hampshire. This driving boom would be similar to those found on the shores of the Kennebec River. Photo taken from Berlin History (unknown) Log Driver Brown Company Berlin, New Hampshire. Online <wikipedia.com> (Nov. 24, 2012).



**New Brunswick Log Jam.** Dynamiting a log jam in New Brunswick, Canada. Similar dynamiting would have happened almost daily on the Kennebec River. Photo taken from Crawford, W. (unknown) Summary of in-channel wood in the Colorado Front Range. Online <warnercnr.colorado.state.edu> (Nov. 24, 2012).

Not only did logging companies modify the flow of water on the Kennebec, but they also modified the banks of the river. The banks of the river caused several problems. Firstly, the water depth on the banks fluctuated. When water was released from the dam, water would rise on the banks, but after a period of time, the water would recede again. This fluctuation would result in logs being stranded on the banks of the river. Secondly, the river banks were rocky. This caused log jams, which severely impacted the efficiency of the log drive. As a solution to both of these problems, driving booms were installed. These booms were made of a string of logs and were placed in the river slightly offshore. This placement not only prevented logs from being stranded on shore, but it also allowed logs to avoid rocks that could cause jams. Thus, driving booms helped logs to flow smoothly down the river.<sup>9</sup>

Another way in which rivers were modified was through the use of dynamite.<sup>11</sup> Dynamite was used to blast rocks on the shore. This process widened the river bed and allowed a larger volume of wood to flow through. In addition, like the driving booms, dynamiting rocks on the shore decreased the obstacles for logs and prevented log jams. River streams and beds were also modified using dynamite to prevent log jams. This was accomplished by blasting large boulders and stumps, as well as straightening sharp bends.<sup>4</sup>

Although these modifications were successful in preventing log jams, because of the large volume of wood flowing down the river, log jams were inevitable and occurred daily. When these daily jams did occur and the key log in a jam was too tight, log drivers would again use dynamite.<sup>10</sup> Often, only the key log would need to be blasted in order to break up the jam and allow the logs to flow freely again.



# Stopping the log drives: The end of an era

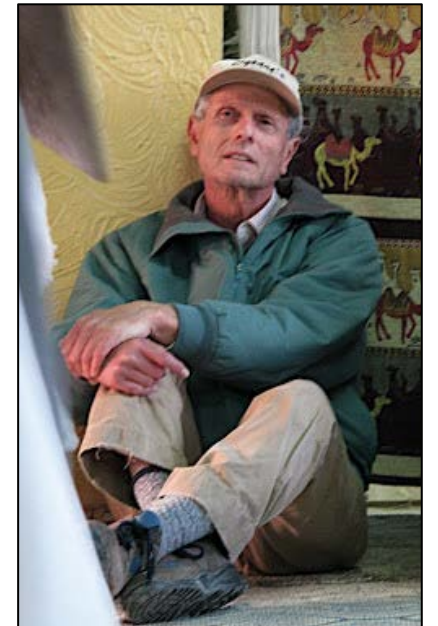


**Logs in the Kennebec River, Maine.** Pulpwood on the Kennebec River so thick that you cannot see the water. About 50% of the wood would be debarked by the time it got to the mills in Waterville. Photo taken from Boston Public Library (unknown year) Logs in the Kennebec River, Maine. Online <<http://www.flickr.com>> (Dec. 1, 2012).

Although the Kennebec River allowed for convenient transportation of cut wood, as time went on the log drives became so dense and frequent, they prevented the river from being used for its other resources. Log jams prohibited the passage of recreational canoeists and kayakers from paddling the river. These jams could be up to four miles long and paddlers would have to portage around it.<sup>12</sup>

In addition to preventing recreational paddling, logging on the river resulted in a great deal of pollution. The effluent from mills decreased the river water quality, as it was routinely dumped in the water, and more importantly, bark from the logs floating down the river would constantly fall off. Over the years, the bark accumulated at the bottom of the river. The presence of bark caused a decrease in the dissolved oxygen and an increase in the release of methane gas.

These changes in gas concentrations negatively impacted species in the river. Adult fish did not have access to proper amounts of oxygen, and their eggs, which need high concentration of dissolved oxygen, were not able to develop properly. In addition, eggs became more susceptible to fungal growth. The decreased dissolved oxygen and the presence of methane also resulted in a decrease in the aquatic insects living on the river bed, which are important food source for fish. These effects of the bark, thus caused a decrease in fish populations as well as benthic fauna.<sup>12</sup>



**Left: Logs on the Kennebec.** Aerial photo of pulpwood on the Kennebec River monopolizing the whole waterway. Photo taken from MPBN (unknown) Maine Experience: Last Log Drive. Maine Public Broadcasting Network. **Right: Howard Trotzky.** Howard Trotzky, the man behind the lawsuit that began the movement against log drives on the Kennebec. Photo taken from Cain, E. (2009) Howard Trotzky. Emily Cain's Gallery. Online <[picassaweb.google.com](http://picassaweb.google.com)> (Dec. 1, 2012).

The environmental impacts of logging on the river were evident to many, however the logging industry was the most economically important industry in the Kennebec River basin. It was not until Howard Trotzky came to Maine to do his master's thesis that the logging companies' rights to the river were challenged.

Howard Trotzky is a native New Yorker, however, he had been coming to Maine since adolescence. When Mr. Trotzky was 14 years old, he went to a Maine summer camp that took a canoe trip up the Kennebec. As they were approaching Caratunk, they came upon a log jam that was impassable and they had to get off the river. Once the group was off the river, Mr. Trotzky overheard the guide say to his camp counselor, "I don't think they have a right to block this river."<sup>12</sup> Mr. Trotzky never forgot that, and twenty years later, when he began writing his master's thesis on the benthic fauna in the upper Kennebec River at the University of Maine, Orono, he decided to do something about it.<sup>12</sup>

Mr. Trotzky had land on the Kennebec River, so he was able to sue the log driving companies at the state level on three grounds: first, by law the river needed to be kept open and free of large log jams; second, the log drives were monopolizing the river, which was a public highway; and third, the log drives polluted the river. Mr. Trotzky's lawsuit, which was for a decrease in the volume of wood sent down the river, inspired a federal lawsuit, which was to end the log drive completely; in order to focus attention on the federal lawsuit, Mr. Trotzky dropped the state lawsuit.<sup>12</sup> Although there was a lot of opposition to ending the log drives due to its importance as an industry, even after an appeal, the federal court concluded that the environmental and social benefits of ceasing the log drive outweighed the benefits of continuing it, and on October 1<sup>st</sup> of 1976, after almost 200 years, the final log drive floated down the Kennebec River.<sup>3,10,13,14</sup>

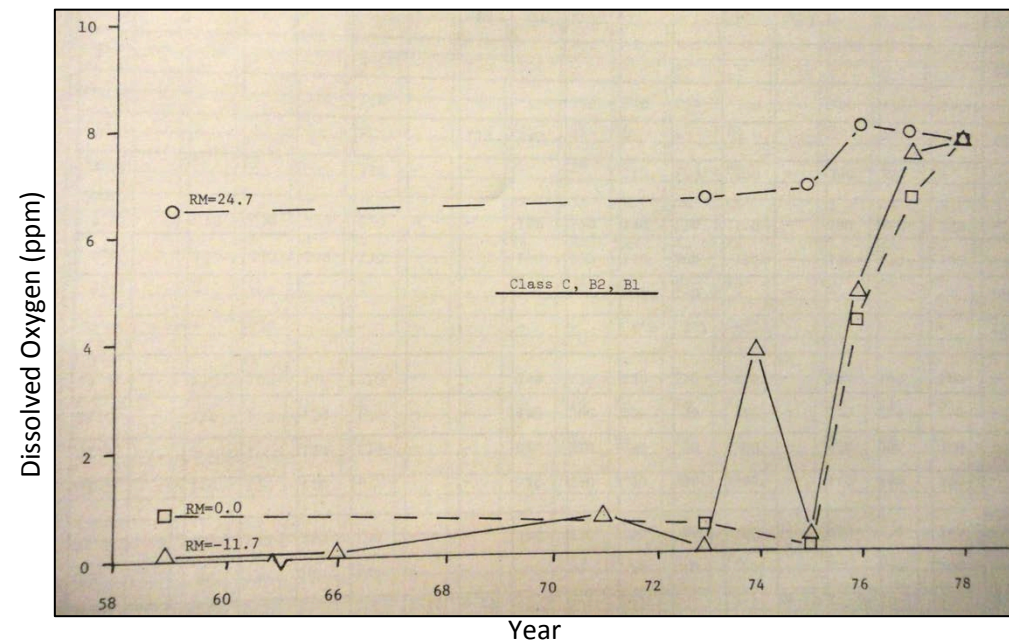


# A fresh start: The Kennebec River after the log drives

After the end of the log drives, logging companies were required to clean up streams, lakes, and parts of the river that were impacted by log drives. This effort was more intense than the regular clean up of the shore of the river and lakes, and men were hired to retrieve the logs stranded on the shore as well as the logs that had sunk.<sup>6</sup>

The benefits of stopping the river driver were almost immediately apparent. By 1978, only two years after the last log drive, the Kennebec River water quality report showed a large increase in the minimum dissolved oxygen levels for river miles 0.0 and 11.7. The increase in dissolved oxygen, which is most likely attributed to a decrease in bark on the bottom of the river enabled adult fish and other organisms in the river to begin to recover.<sup>15</sup>

In addition, the cleaner water began attracting people to the river. In order to ensure that the natural beauty of the river was maintained, the rejuvenation plan for the Kennebec River, which was written in 1974 was implemented. The plan zoned areas of the Kennebec for development and gave recommendations for water use at various intervals of the river.<sup>1</sup>



**Minimum Dissolved Oxygen in the Kennebec.** The minimum dissolved oxygen in the Kennebec river per year. Graph taken from Maine Bureau of Water Quality Control (1979) The Kennebec River 1978 Water Quality, an Historic Perspective acquired from Bates College Library. State of Maine Department of Environmental Protection.



**Left: Rafter on the Kennebec.** A white water rafting trip headed down the Kennebec River. Photo taken from Northern Outdoors (2012) Rafting Photo Gallery Online <northernoutdoors.com> (Dec. 1, 2012). **Bottom: Wyman Lake.** Wyman Lake today. Thirty-six years ago it would have been filled with four-foot logs. Photo taken from Northern Outdoors (2012) Fall Foliage in Maine – Things To Do. Online <northernoutdoors.com> (Dec. 1, 2012).



The absence of the logs on the river and the clean water that runs down the river continues to provide many opportunities. One of the most common uses of the river in the summer is white water rafting. This tourist attraction brings many people into small towns located along the Kennebec and helps them subsist during the summer months. The status of fish populations in the Kennebec have also improved, and anglers are now able to enjoy the resource without fear of logs hitting them and their boats as they come down river.

Although there has been a significant recovery in the condition of the Kennebec, some of the impacts of the log drives are still visible. In fact, logging companies are continuing to restore ecosystems that were impacted. Plum Creek Timberland, one of the largest private landowners in the state, is currently working with the Maine Department of Inland Fisheries and Wildlife, Caribou Springs LLC, and Trout Unlimited to restore Intervale Brook. This brook is one of the many brooks that had its side channels strategically blocked, and its boulders and trees removed to increase its efficiency for log driving. Consequently, it lost its natural structure and some of its biodiversity. Plum Creek and its partners recently created a treatment plan for the brook, which includes dam removal as well as adding boulders. Through this two phase plan, the depth and diversity of Intervale Brook will hopefully be restored.<sup>16,17</sup>

The efforts of Plum Creek and its partners demonstrate how, even though over three decades have passed since the last log drive and the condition of the river and its tributaries has improved, the impacts of the 141 year tradition remain. The log drives, which are such an important piece of history on the Kennebec River, are not only a part of the past, but are also part of the future; they have shaped the river basin into what it is today, and will continue to shape it into what it will become.

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