



Bob Boucher
Milwaukee RiverKeeper
Wisconsin, United States

Modeling the Milwaukee River watershed to measure the potential flood mitigation benefits of beaver created wetlands to restore the natural hydrology and reduce flooding during high water events.

This is a partnership study with Milwaukee RiverKeeper, the Milwaukee Metropolitan Sewerage district (MMSD) and the University of Wisconsin, School of Fresh Water Sciences.

Using a modeling program developed by Dr. Joe Wheaton (University of Utah) titled the “Beaver Restoration Analog Tool (BRAT) we will evaluate the Milwaukee River Watershed (900 sq. miles) in Wisconsin for flood benefits if beavers were restored. This modeling program uses “Global Information Systems” (GIS) technology to map watershed elevations to determine site locations for beaver complex wetland restoration. Then we model those wetland sites hydrology, using a variety of scenarios (such as: 10 inches of rain in 20 hours) to measure the potential hydrology benefits that beaver dam wetlands would have across the watershed landscape to reduce flooding during high water events. Various scenarios of dam structure elevations, placement, and density offer insights into potential flood benefits. Two researchers from the University of Wisconsin, Dr. Qian Liao (Hydrologist) and Dr. Changshan Wu (GIS specialist) will run the program and publish the results.

MMSD has flood control authority for the Milwaukee River which has its’ mouth in downtown Milwaukee as it enters Lake Michigan. Protecting the City from flooding, its’ water supply and discharge infrastructure is key to its’ mission. Milwaukee is the largest city in Wisconsin and the most important economic engine for the state.

Milwaukee RiverKeeper is the non-profit conservation organization. Its’ mission is to uphold the Clean Water Act goal of “fishable and swimmable” for the Milwaukee river watershed. It also promotes restoring wildlife habitat, biodiversity and water quality.



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The results of this study can be duplicated and offer economic benefits to motivate beaver restoration efforts in the watersheds of North America. In the face of climate change this is in the best interest of everyone. Restoring beavers to the rivers of North America restores the landscapes hydrology to support biodiversity, stabilizing watersheds during high water events and gives us all clean water.