

Public Abstract

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Degradation of river systems is apparent worldwide. A group of the nation's leading freshwater scientists under the auspices of the National Science Foundation and American Rivers, the nation's leading river conservation organization, engaged in a unique collaborative research effort between 2001 and 2006. The name of this research effort was the National River Restoration Science Synthesis (NRRSS). The goal of NRRSS was to synthesize existing data on extent, nature, and scientific basis of restoration projects occurring in rivers and their watersheds. This task was completed for the Upper Mississippi River Basin (UMRB). A total of 62,108 projects totaling \$1.6 billion were collected. Data sources used to collect information on individual projects offered little details on project monitoring, limiting the ability to pass along lessons learned to future practitioners and advance the science of river restoration. A survey of 70 project managers and practitioners who have implemented river restoration projects in the UMRB indicated barriers to adaptive management in river restoration exist. These barriers include setting quantitative project objectives, selecting appropriate monitoring designs to address objectives, and little dissemination of project evaluations outside of their organizations. An investigation of a U.S. Department of Agriculture program to improve water quality conditions in the Illinois River, costing \$300 million, was undertaken. Hydrologic modeling indicates this program may not cost-effectively accomplish objectives due to a general, broad-scale implementation plan and no targeted strategy to address high relative sediment sources. River restoration remains a complex management choice for natural resource agencies.