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Low-tech process-based restoration- lessons learned from beaver to address degraded riverscapes

Because the scale of degraded riverscapes is enormous, we must implement alternative restoration techniques that are much more efficient (much greater extents for a given cost) than traditional approaches. Massive removal of both beaver and large wood from riverscapes have left many streams across North America and Eurasia structurally starved. We describe “Low-tech process-based” restoration, detailed in a manual we recently published (<http://lowtechpbr.restoration.usu.edu/manual/>), where the emphasis moves away from highly engineered approaches of creating static channels to adding simple structures that promote processes that will maintain streams in a state of dynamic equilibrium. We summarize general restoration principles applicable to a large range of approaches and conditions. We then discuss principles more focused on low-tech processed-based restoration techniques. We illustrate how beaver dam analogs (BDAs) and simple woody debris structures can promote beaver activity and increase wood accumulations to improve channel complexity, floodplain connectivity, and riparian function.