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The legacy of mill dams in central European low-order streams

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Historic dams of largely unknown age are a widespread feature within German 1st to 3rd order streams. It has been proposed that accelerated slope erosion due to deforestation and agricultural land use is the reason for the aggradation of some central European floodplains, however this process only explains the delivery of sediment to these rivers. First results show that valley bottom damming was also a critical mechanism for the effective trapping of this increased sediment load. In this study we determine the onset and magnitude of this first impact of humans on riverscapes as a result of valley bottom damming, and examine the management implications. The extensive sedimentation of loam floodplains was precipitated by dam induced changes to the flow regime, and in turn caused the observed (stratigraphical) change of the channels from multithread to meandering. This floodplain loam also blankets a palaeo-wetland soil, which formed an efficient carbon sink. A modelling approach combined with the quantification of the so stored sediments enables us to predict potentially remobilised sediments after dam-removal.