The Role of Vegetation in River Bank Erosion

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Abstract:

The purpose of this paper is to describe briefly how streambank vegetation, both roots and shoots, modify the 'skin' or surface layer and how this in turn affects these two processes. The findings described herein are based in part on a field study of root distribution and architecture in a sandy, channel levee along the Sacramento River in California. Root concentrations were determined using the profile wall method in which root cross sections are exposed in the vertical wall of an excavated trench. Transects were excavated running both parallel and perpendicular to the crest of the levee through areas dominated by different woody plant species typical of riparian vegetation. Study results are discussed.

Subject Headings: Vegetation | River bank stabilization | Erosion | Field tests | Levees and dikes | Walls | Excavation | River flow | California | United States

A few 2D models can reproduce river width variations treating bank erosion and accretion separately. Morphological Adaptation of River Channels to Vegetation Establishment: A Laboratory Study. Article. This research deals with morphological studies of small rivers experiencing bank erosion processes when only limited data are available. A reach of the meandering gravel-bed river Irwell (United Kingdom) is taken as a case study in order to analyze the bank retreat process that is endangering the stability of structures located in the area. Two models of different complexity are applied. The first is a physic-based one-line meander model, computing bed topography, flow field and migration rate of meandering rivers in areas with non-uniform erodibility. Bank erosion and turbidity were monitored in the Tookany Creek and its tributary Mill Run in the greater Philadelphia, PA region. To evaluate the influence of the invasive species Reynoutria japonica (Japanese knotweed) on erosion, reaches were chosen based on their riparian vegetation and degree of incision. Bank pins and turbidity loggers were used to estimate sediment erosion. The relationship between vegetation in the riparian zone and sediment dynamics is an important factor in stream geomorphology. When trees are removed it results in extreme erosional potential as seen after changes in land management in the America's after European settlement [19]. Riverbank erosion is the wearing away of the banks of a stream. Prevent riverbank erosion with erosion control products for soil stabilization and plant growth. The single most effective method of erosion control in rivers is restoring bank vegetation. Allowing the vegetation to colonize and establish a significant root system will strengthen the bank. Riverbank Erosion Main Causes. River bank erosion has several causes with even more factors that can accelerate it. The major causes are flooding, land use, stream management, over-clearing of catchment and stream bank vegetation, and poorly managed sand and gravel extraction. Factors That Accelerate Erosion: Stream bed lowering or in fill. Flooding of bank soils followed by rapid drops in flow.